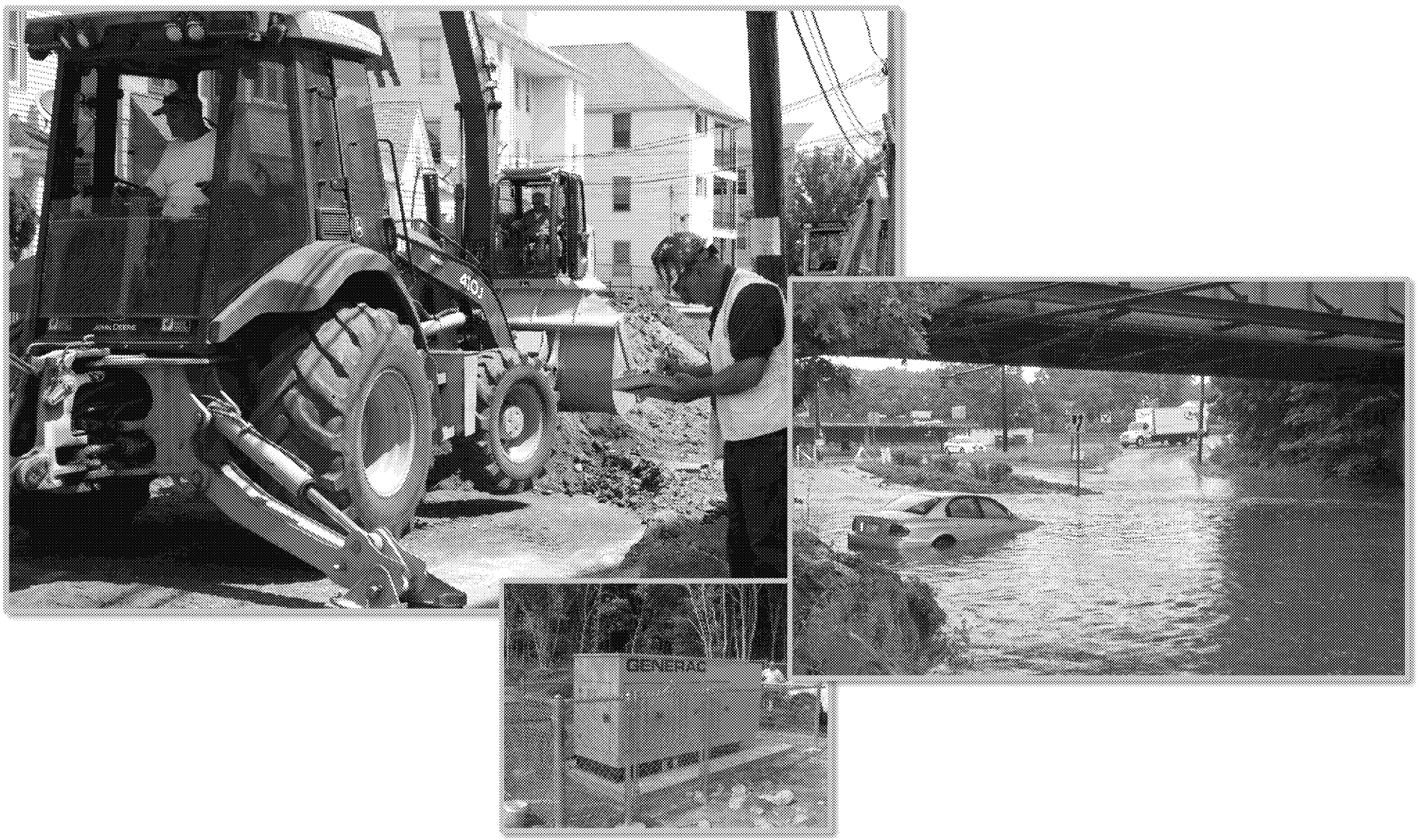
EMERGENCY PLANNING AND SECURITY



WATER QUALITY MONITORING

There are many sources for water pollution. Contamination of drinking water can occur at multiple points, including in the water source, through inadequate water treatment processes, in storage tanks, and in distribution systems (the pipes that carry water to homes, businesses, schools, and other buildings). Treating water to remove or kill disease-causing contaminants is critical to the protection of public health.

Maximum Contaminant Levels

Under the Safe Drinking Water Act, EPA sets maximum legal limits on the levels of certain contaminants in drinking water (MCL). The legal limits reflect both the level that protects human health and the level that water systems can achieve using the best available technology.

EPA rules also set treatment requirements, water-testing schedules, and sampling methods that water systems must follow.

HEALTH is the agency responsible for ensuring that the water systems in Rhode Island comply with these rules. Compliance Data for 2013 is included in Appendix-II (page 40).

Chemical Contaminant Rules

Chemical Contaminants were regulated in phases, which are collectively referred to as the Chemical Phase Rules. HEALTH regulates more than 90 contaminants in three contaminant groups: Inorganic Contaminants (IOCs), Volatile Organic Contaminants (VOCs), and Synthetic Organic Contaminants (SOCs). A list of contaminants and their maximum contaminant levels (MCLs), is maintained on line at http://water.epa.gov/drink/contaminants/index.cfm . The rules apply to all public water systems (PWS). PWS type, size, and water source determine which contaminants require monitoring for that system.

Radionuclides

Most drinking water sources have very low levels of radioactive contaminants ("radionuclides"), most of which are naturally occurring, although contamination of drinking water sources from human-made nuclear materials can also occur.

WATER QUALITY MONITORING

Arsenic

Arsenic is a toxic chemical element that is unevenly distributed in the Earth's crust in soil, rocks, and minerals. It enters drinking water supplies from natural deposits in the Earth from agricultural and industrial practices.

Total Coliform

There are a variety of bacteria, parasites, and viruses which can cause health problems when humans ingest them in drinking water. Testing water for each of these germs would be difficult and expensive. Instead, water quality and public health workers measure for the presence of bacteria in drinking water using coliform bacteria as an indicator. The presence of any coliforms in drinking water suggests that there may be disease-causing agents in the water.

Disinfectants and Disinfection Byproducts (DBPs)

In many cases, source water from a lake, river, reservoir or groundwater aquifer needs to be disinfected to inactivate (or kill) microbial pathogens. A major challenge for water suppliers is how to balance the risks from microbial pathogens and disinfection byproducts. In 2013 there were 48 water systems regulated by this rule. This includes 21 systems that purchase and distribute water that has been treated with a disinfectant. 2013 was the final year of Stage 1 of the DBP Rule. Affected water systems are now subject to Stage 2 of the rule, which improves public health protection by requiring water systems to comply with the MCL's at each sample location instead of a distribution system average. One water system and its three purchasers have received a two-year extension to Stage 2 for capital improvements.

Ground Water Rule

Although a greater population gets their drinking water from surface water sources, the majority of the state's water systems have groundwater sources. The purpose of the rule is to reduce disease incidence associated with disease-causing microorganisms in drinking water. The rule establishes a risk-based approach to target ground water systems that are vulnerable to fecal contamination. Groundwater systems that are identified as being at risk of fecal contamination must take corrective action to reduce potential illness from exposure to microbial pathogens. The rule applies to all systems that use groundwater as a source of drinking water.

WATER QUALITY MONITORING

Surface Water Treatment Rules (SWTR)

These rules establish filtration and disinfection treatment requirements for the control of pathogens for all public water supplies that utilize surface water sources or groundwater sources that are under the influence of surface water. In Rhode Island there are 9 water systems that are covered by these rules. All of these water systems provide filtration and disinfection as part of their treatment processes. The SWTR requires an additional 22 systems that are secondary sellers of surface water to maintain a chlorine residual throughout their distribution system.

Lead & Copper Rule

The Lead and Copper Rule is intended to minimize delivery of lead and copper in water provided by community and non-transient non-community water systems. Lead and copper enter drinking water primarily through plumbing materials. The treatment technique requires systems to monitor drinking water at customer taps. Excessively corrosive water, or excessive particulate lead, triggers a requirement for treatment, public education, and if applicable, lead service line replacement. The US EPA is now considering rule changes that will require different actions on the part of suppliers exceeding the action levels.

Seven water systems are currently exceeding either the lead or copper action level, down from thirteen in 2011. Of those seven, only two are community systems, while five non-transient systems are still having difficulty. All are taking appropriate action to resolve their problems.

Providence Water has been exceeding the lead action level since 2006, and has since been working to adjust its water chemistry to reduce corrosion; this effort is ongoing. Lead service line replacement in the distribution system has been halted, pending possible changes to the US EPA Lead and Copper Rule; a series of consent agreements have been in force requiring other actions to reduce the community's exposure to lead in water. These include continued monitoring, flushing and cleaning of the distribution system and pipe lining, and an expert panel convened in 2011 continues to advise Providence and the State on how best to resolve the corrosion problem.

WATER QUALITY SAMPLING

Water quality sampling and testing not only ensures that each system complies with required monitoring, but more importantly, ensures the quality of the state's drinking water. HEALTH's laboratory continues to take an active role in assisting water systems with required water quality testing. During 2013, HEALTH's laboratory analyzed 5,691 water quality samples. The Office of DWQ evaluated 37,840 analytical results.

HEALTH'S ROLE

- Test drinking water from Rhode Island public water systems for bacteria, organic and inorganic contaminants, minerals, and trace metals to determine safety and compliance with the Safe Drinking Water Act,
- Test potability of water from private wells,
- Analyze water samples in support of special pollution monitoring programs,
- Maintain analytical instrumentation to detect and measure the concentration of a variety of pesticides, volatile and synthetic organic pollutants in drinking water,
- Ensure the high quality of testing services,
- Operate the analytical laboratory certification program, and
- Maintain a list of laboratories certified for the analysis of drinking water, non-potable water and environmental lead.

COMPLIANCE TRACKING

Compliance data is included herein for calendar year 2013. The 2013 Annual Compliance Report summary table, as required by the Safe Drinking Water Act amendments of 1996, can be found in Appendix – II (page 40).

During calendar year 2013, 164 violations of the Safe Drinking Water Act were reported by 123 of the State's public water systems. Of these 164 violations, 52 were water quality violations, 103 were monitoring violations, 3 were treatment technique violations, and 6 were a CCR reporting violation. A summary of the violations is presented in Appendix – I (page 35).

Quality Violations

Quality violations occur when the monitoring results for a particular contaminant exceed the drinking water standard within a specific time period. Public water systems must monitor for 90 contaminants including inorganic compounds, volatile organic compounds, synthetic organic compounds, radionuclides, and pathogens.

During 2013, 30 of the public systems exceeded a drinking water standard for a total of 52 violations. Of those 52 violations, 45 were bacteriological violations 6 were for nitrate, and 1 was for Trihalomethanes (TTHM's).

Monitoring Violations

Monitoring and reporting violations occur when a water system fails to perform the required monitoring for a particular contaminant within a specified time period, and/or fails to report the results by the tenth of the following month, as required. During 2013, 90 of the state's water systems failed to perform the required monitoring and/or reporting within the specified time period. In all, 109 monitoring and reporting violations were reported.

Public Notification Violations

Public Notification violations occur when a water system fails to perform the required public notification within the required time period. During 2013, none of the public water system failed to perform Public Notification.

COMPLIANCE TRACKING

Public Education Violations

Public Education violations occur when a water system fails to perform the required public education within the required time period. During 2013, none of the public water systems failed to perform Public Notification.

Consumer Confidence Report Violations

Consumer Confidence Report violations occur whenever a Community public water system fails to provide a Consumer Confidence Report (CCR) to their consumers by July 1 of the following calendar year, and /or fail to submit a Consumer Confidence Report Certification form to the Office of Drinking Water Quality by October 1 of that same year. During 2013, 6 public water systems failed to provide a Consumer Confidence Report on time.

Treatment Technique Violations

Treatment Technique violations occur when a water system fails to comply with the required treatment. During 2013, 3 of the state's water systems failed to maintain proper treatment.

164

NUMBER OF VIOLATIONS OF THE SAFE DRINKING WATER ACT DURING 2013

123

NUMBER OF SYSTEMS RECEIVING VIOLATIONS IN 2013

APPENDIX I

VIOLATIONS 2013

COMMUNITY WATER SYSTEMS

	NUMBER OF VIOLATIONS
Quality	
KENT COUNTY WATER AUTHORITY (ACUTE TCR)	1
KINGSTON WATER DISTRICT (TCR)	1
NEWPORT, CITY OF (TTHM)	1
PASCOAG UTILITY DISTRICT (TCR)	1
SOUTH KINGSTOWN SOUTH SHORE (TCR)	2
THE VILLAGE ON CHOPMIST HILL (TCR)	1
Monitoring and Reporting	
ABBEY LANE COMMUNITY ASSN., INC. (TCR)	1
BETHEL VILLAGE (PB&CU)	1
INDIAN CEDAR MOBIL HOME PARK (PB&CU)	1
JOHNSTON WATER CONTROL FACILITY-NARDOLILLO ST. (TCR)	2
LADD CENTER WATER SYSTEM (VOC)	1
MEADOWLARK, INC (NO3)	1
LINDHBROOK WATER COMPANY (PB&CU)	1
MOBIL VILLAGE, INC. (PB&CU)	1
PAWTUCKET-CITY OF (TT)	1
PASCOAG UTILITY DISTRICT, WATER DIVISION (CL)	1
PORTSMOUTH WATER & FIRE (TTHM/HAA5)	2
STONE BRIDGE FIRE DISTRICT (CL)	1
WARWICK-CITY OF (TTHM/HAA5)	2
WARWICK-POTOWOMUT (TTHM/HAA5)	2
LELAND POINT CONDOMINIUMS HOA, INC. (TCR)	2
Consumer Confidence Report	
BETHEL VILLAGE	1
CAMP E-HUN-TEE	1
CENTRAL BEACH FIRE DISTRICT	1
MAPLEHILL MOBIL HOME PARK	1
MOBIL VILLAGE, INC.	1
PRUDENCE ISLAND WATER DISTRICT	1
Treatment Technique	
PASCOAG UTILITY DISTRICT, WATER DIVISION (TT)	1
COMMUNITY WATER SYSTEM, SUBTOTAL	34

NON-TRANSIENT NON-COMMUNITY WATER SYSTEMS

VIOLATIONS 2013

	NUMBER OF VIOLATIONS
Quality	
CHOPMIST HILL COMMUNITY CENTER (TCR)	3
Monitoring and Reporting	
ARCADIA CHILDRENS HOME (PB&CU)	1
CHOPMIST HILL COMMUNITY CENTER (PB&CU)	1
EARLY LEARNING CENTERS OF RI (PB&CU)	1
FOGARTY MEMORIAL SCHOOL (PB&CU)	1
JUST FOR KIDS (TCR,GWR)	2
NORTH SCITUATE ELEMENTARY (CL)	3
NORTH SMITHFIELD COMBAT COMMUNICATIONS (PB&CU)	1
PINEWOOD PARK SCHOOL (PB&CU)	1
PONAGANSETT HIGH SCHOOL (PB&CU)	3
SCITUATE VILLAGE SHOPPING CENTER (PB&CU)	1
NON-TRANSIENT NON-COMMUNITY WATER SYSTEM, SUBTOTAL	18

VIOLATIONS 2013

TRANSIENT WATER SYSTEMS

Quality	NUMBER OF VIOLATIONS
ALBACO, L.L.C. (TCR)	1
BEAVER RIVER GOLF (TCR)	1
BELLA RESTAURANT (TCR)	2
BURLINGAME RESERVATION-MAIN CAMP-LEGIONTOWN (TCR)	1
CAMP ALDERSGATE DINING (TCR)	1
CAMP RUSSELL-PUMP HOUSE MALLARD SHORES (TCR)	3
COLWELLS CAMPGROUND (TCR)	1
COVENTRY PINES GOLF CLUB (ACUTE TCR)	1
EAST BEACH LANDINGS CONDOMINIUMS (TCR)	5
GINNY –B FAMILY CAMPGROUND (TCR)	1
GRAYS ICE CREAM (TCR)	1
GREENWOOD HILL CAMPGROUND ASSOCIATION (TCR)	1
KILDUFF BROTHERS BUILDERS, INC. (TCR)	1
OAK EMBERS CAMPGROUND (NO3)	2
PHIL & ANNS SUNSET MOTEL (NO3)	1
RI SPORTS CENTER, INC. (ACUTE TCR, TCR)	2
RUSTIC TRI-VIEW DRIVE IN THEATRE-SNACK BAR (TCR)	3
SOUTH SHORE MENTAL HEALTH CENTER (TCR)	1
STEPPING STONE STABLES (NO3, TCR)	4
WOODLAND MEETING HOUSE (TCR)	2
WOONSOCKET CONGREGATION OF JEHOVAHS WITNESSES (TCR)	1
YMCA CAMP FULLER (ACUTE TCR,TCR)	6

VIOLATIONS 2013

TRANSIENT WATER SYSTEMS (CONTINUED)

Monitoring and Reporting:	NUMBER OF VIOLATIONS
ABBYS COUNTRY KITCHEN (TCR)	1
AGIOS INC DBA GENTLEMAN FARMER REST. (TCR)	2
AMERICAN LEGION-GORDON GREENE POST #27 (TCR)	1
BURLINGAME RESERVATION-MAIN CAMP-LEGIONTOWN (TCR)	1
BOWDISH LAKE CAMPING AREA, BROWN 1&2 (TCR)	1
BRANTALS RESTAURANT AND CATERING (NO3)	1
BURLINGAME RESERVATION-MAIN CAMP-LEGIONTOWN (GWR,TCR)	3
CAMP JORI (TCR)	1
CAMP PONAGANSETT (TCR)	1
COLWELLS CAMPGROUND (TCR)	1
CORNER BISTRO, LLC (TCR)	1
COVENTRY PINES GOLF CLUB (GWR, TCR)	2
D.B. MART (NO3)	1
DLM VARIETY DBA HARMONY CORNER STORE (TCR)	1
EAST BEACH LANDING CONDOMINIUMS (TCR, NO3)	5
EAST GREENWICH GOLF AND COUNTRY CLUB TCR)	1
FANTASTIC UMBRELLA FACTORY (NO3)	1
GINNY B CAMPGROUND (GWR,TCR)	2
HARMONY MARKETPLACE, LLC (NO3)	1
HIGHVIEW INN (TCR)	1
HOLIDAY ACRES, INC. (TCR)	1
LINDYS TAVERN (TCR)	1
LITTLE RHODY VASA PARK (TCR)	1
LUCKY (TCR)	1
MOTHER OF HOPE CAMP (#2) (TCR)	1
MOTHER OF HOPE DAY CAMP (TCR)	1
NARRAGANSETT INN (TCR)	1
NATIONWIDE DIESEL TECHNOLOGIES INC. (TCR)	1
NEW ENGLAND FARMS (TCR)	1
NUTZ (TCR)	1
RI SPORTS CENTER, INC. (GWR)	1
RICHMOND TOWN HALL (TCR)	1
ROUND MEADOWS CAMPGROUND (TCR)	1
RUSTIC TRI-VIEW DRIVE IN THEATR SNACK BAR (GWR, TCR)	3

TRANSIENT WATER SYSTEMS (CONTINUED)

VIOLATIONS 2013

	NUMBER OF VIOLATIONS
SAKONNET GOLF CLUB (NO3)	1
SCITUATE VILLAGE SHOPPING CENTER (PB&CU)	1
SIMMONS CAFÉ AND MARKETPLACE (NO3)	1
ST. EUGENES CHURCH (TCR)	1
STONE HOUSE CLUB (GWR, TCR)	2
TDM ENTERPRISES, INC., DBA GATORS PUB (TCR)	1
THE HITCHING POST (NO3, TCR, GWR)	3
UNCLE RONNIES RED TAVERN (TCR)	1
WALKERS ROADSIDE STAND-BAKERY (TCR)	1
WEST GREENWICH TRAVEL CENTER (NO3,TCR)	4
WOON CONGREGATION OF JEHOVAHS WITNESSES (TCR)	1
YMCA CAMP FULLER (GWR,TCR)	10
TRANSIENT WATER SYSTEM, SUBTOTAL	114

APPENDIX II

Compliance Table

State: Rhode Island

Reporting Interval: January 1, 2013 through December 31, 201\3

SDWIS Codes		MCL (mg/l)	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
			Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations
	Organic Contaminants							
2981	1,1,1-Trichloroethane	0.2	0	0			1	1
2977	1,1-Dichloroethylene	0.007	0	0			1	1
2985	1,1,2-Trichloroethane	.005	0	0			1	1
2378	1,2,4-Trichlorobenzene	.07	0	0			1	1
2931	1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0	0			1	1
2980	1,2-Dichloroethane	0.005	0	0			1	1
2983	1,2-Dichloropropane	0.005	0	0			1	1
2063	2,3,7,8-TCDD (Dioxin)	$3x10^{-8}$	0	0			0	0
2110	2,4,5-TP	0.05	0	0			0	0
2105	2,4-D	0.07	0	0			0	0

State: Rhode Island

Reporting Interval: January 1, 2013 through December 31, 201\3

SDWIS Codes		MCL (mg/l)	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
			Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations
2051	Alachlor	0.002	0	0			0	0
2050	Atrazine	0.003	0	0			0	0
2990	Benzene	0.005	0	0			1	1
2306	Benzo[a]pyrene	0.0002	0	0			0	0
2046	Carbofuran	0.04	0	0			0	0
2982	Carbon tetrachloride	0.005	0	0			1	1
2959	Chlordane	0.002	0	0			0	0
2380	cis-1,2-Dichloroethylene	0.07	0	0			1	1
2031	Dalapon	0.2	0	0			0	0
2035	Di(2-ethylhexyl)adipate	0.4	0	0			0	0
2039	Di(2-ethylhexyl)phthalate	0.006	0	0			0	0
2964	Dichloromethane	0.005	0	0			1	1
2041	Dinoseb	0.007	0	0			0	0

State: Rhode Island

Reporting Interval: January 1, 2013 through December 31, 201\3

SDWIS Codes		MCL (mg/l)	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
			Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations
2032	Diquat	0.02	0	0			0	0
2033	Endothall	0.1	0	0			0	0
2005	Endrin	0.002	0	0			0	0
2992	Ethylbenzene	0.7	0	0			1	1
2946	Ethylene dibromide	0.00005	0	0			1	1
2034	Glyphosate	0.7	0	0			0	0
2065	Heptachlor	0.0004	0	0			0	0
2067	Heptachlor epoxide	0.0002	0	0			0	0
2274	Hexachlorobenzene	0.001	0	0			0	0
2042	Hexachlorocyclo-pentadiene	0.05	0	0			0	0
2010	Lindane	0.0002	0	0			0	0
2015	Methoxychlor	0.04	0	0			0	0
2989	Monochlorobenzene	0.1	0	0			0	0

State: Rhode Island

Reporting Interval: January 1, 2013 through December 31, 201\3

SDWIS Codes		MCL (mg/l)	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
			Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations
2968	o-Dichlorobenzene	0.6	0	0			1	1
2969	para-Dichlorobenzene	0.075	0	0			1	1
2383	Total polychlorinated biphenyls (PCB's)	0.0005	0	0			0	0
2326	Pentachlorophenol	0.001	0	0			0	0
2987	Tetrachloroethylene	0.005	0	0			1	1
2984	Trichloroethene	0.005	0	0			1	1
2996	Styrene	0.1	0	0			1	1
2991	Toluene	1.0	0	0			1	1
2979	trans-1,2-Dichloroethylene	0.1	0	0			1	1
2955	Xylenes (total)	10	0	0			1	1
2020	Toxaphene	0.003	0	0			0	0
2036	Oxamyl (Vydate)	0.2	0	0			1	1

State: Rhode Island

Reporting Interval: January 1, 2013 through December 31, 201\3

SDWIS Codes		MCL (mg/l)	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
			Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations
2040	Picloram	0.5	0	0			1	1
2037	Simazine	0.004	0	0			1	1
2976	Vinyl chloride	0.002	0	0			0	0
	Subtotal		0	0			1 (see notes #2)	1
	Stage 1 Disinfectant Byproducts Rule							
1009	Chlorite	1.0	0	0			0	0
1011	Bromate	0.010	0	0			0	0
1006	Chloramines	4.0	0	0			0	0
1008	Chlorine Dioxide	0.8	0	0			0	0
0999	Chlorine	4.0	0	0			3	2
2950	Total Trihalomethanes (Section 7.0 systems)	0.08	1	1			3	3

State: Rhode Island

Reporting Interval: January 1, 2013 through December 31, 201\3

SDWIS Codes		MCL (mg/l)	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
			Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations
2456	Total Haloacetic Acids	0.06	0	0			3	3
2920	Total Organic Carbon Removal Ratio	1.0			0	0	0	0
	Subtotal		1	1	0	0	9	9
	Inorganic Contaminants							
1074	Antimony	0.006	0	0			0	0
1005	Arsenic	0.05	0	0			0	0
1094	Asbestos (>10 micrometers)	7 million fibers/L	0	0			0	0
1010	Barium	2.0	0	0			0	0
1075	Beryllium	0.004	0	0			0	0
1015	Cadmium	0.005	0	0			0	0
1020	Chromium	0.1	0	0			0	0

State: Rhode Island

Reporting Interval: January 1, 2013 through December 31, 201\3

SDWIS Codes		MCL (mg/l)	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
			Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations
1024	Cyanide (as free cyanide)	0.2	0	0			0	0
1025	Fluoride	4.0	0	0			0	0
1035	Mercury	0.002	0	0			0	0
1040	Nitrate	10	6	3			12	11
1041	Nitrite	1	0	0			7	7
1045	Selenium	0.05	0	0			0	0
SM	Sodium						0	0
1085	Thallium	0.002	0	0			0	0
1038	Total nitrate and nitrite	10 (as Nitrogen)	0	0			0	0
	Subtotal		6	3			12	11
	Radionuclide MCLs							
4000	Gross alpha	15 pCi/l	0	0			0	0
4010	Radium-226 and radium-228	5 pCi/l	0	0			0	0

State: Rhode Island

Reporting Interval: January 1, 2013 through December 31, 201\3

SDWIS Codes		MCL (mg/l)	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
			Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations
4101	Gross beta	4 mrem/yr	0	0			0	0
	Subtotal		0	0			0	0
	Total Coliform Rule							
21	Acute MCL violation	Presence	4	4				
22	Non-acute MCL violation	Presence	41	23				
23,25	Major routine Major repeat						44	38
24,26	Minor routine Minor repeat						9	8
34	Groundwater Rule						13	9
75	Public Education						0	0
	Subtotal		45	27			66	55

State: Rhode Island

Reporting Interval: January 1, 2013 through December 31, 201\3

SDWIS Codes		MCL (mg/l)	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
			Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations
	Surface Water Treatment Rule							
36	Monitoring, routine/repeat						1	1
41, 43, 44	Treatment techniques				2	2		
	Unfiltered Systems							
31	Monitoring, routine/repeat						3	2
42	Failure to filter				0	0		
	Subtotal				2	2	4	3
	Lead and Copper Rule							
51	Initial lead and copper tap M/R		0	0			0	0
52,56	Follow-up or routine lead and copper tap M/R		0	0			9	8
53	Water Quality Parameters						1	1

State: Rhode Island

Reporting Interval: January 1, 2013 through December 31, 201\3

SDWIS Codes		MCL (mg/l)	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
			Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations	Number of Violations	Number of Systems With Violations
57	OCCT/SOWT RECOM./STUDY						3	3
58,62	Treatment Installation				0	0		
65	Public education						0	0
	Subtotal		0	0	0	0	13	12
	Consumer Confidence Reports (CCR)							
71	CCR Complete failure to report (Major)						0	0
72	CCR Content Inadequacy (Minor)						6	6
	Subtotal						6	6
Totals			52	31	1	1	111	97

Notes:

1) Values are in milligrams per liter (mg/l), unless otherwise specified.
2) Monitoring violations for Volatile Organic Compounds are issued as a single violation, not as violations for each of the 21 regulated contaminants.

Definitions for Appendix (Compliance Table)

The following definitions apply to Appendix A (Compliance Table) above.

Filtered Systems: Water systems that have installed filtration treatment [40 CFR 141, Subpart H].

Inorganic Contaminants: Non-carbon-based compounds such as metals, nitrates, and asbestos. These contaminants are naturally-occurring in some water, but can get into water through farming, chemical manufacturing, and other human activities. EPA has established MCLs for 15 inorganic contaminants [40 CFR 141.62].

Lead and Copper Rule: This rule established national limits on lead and copper in drinking water [40 CFR 141.80-91]. Lead and copper corrosion pose various health risks when ingested at any level, and can enter drinking water from household pipes and plumbing fixtures. States report violations of the Lead and Copper Rule in the following six categories:

Initial lead and copper tap M/R: SDWIS Violation Code 51 indicates that a system did not meet initial lead and copper testing requirements, or failed to report the results of those tests to the State.

Follow-up or routine lead and copper tap M/R: SDWIS Violation Code 52 indicates that a system did not meet follow-up or routine lead and copper tap testing requirements, or failed to report the results.

Treatment installation: SDWIS Violation Codes 58 AND 62 indicate a failure to install optimal corrosion control treatment system (58) or source water treatment system (62) which would reduce lead and copper levels in water at the tap. [One number is to be reported for the sum of violations in these two categories].

Public education: SDWIS Violation Code 65 shows that a system did not provide required public education about reducing or avoiding lead intake from water.

Maximum Contaminant Level (MCL): The highest amount of a contaminant that EPA allows in drinking water. MCLs ensure that drinking water does not pose either a short-term or long-term health risk. MCLs are defined in milligrams per liter (parts per million) unless otherwise specified.

Monitoring: EPA specifies which water testing methods the water systems must use, and sets schedules for the frequency of testing. A water system that does not follow EPA's schedule or methodology is in violation [40 CFR 141].

States must report monitoring violations that are significant as determined by the EPA Administrator and in consultation with the States. For purposes of this report, significant monitoring violations are major violations and they occur when no samples are taken or no results are reported during a compliance period. A major monitoring violation for the surface water treatment rule occurs when at least 90% of the required samples are not taken or results are not reported during the compliance period.

Organic Contaminants: Carbon-based compounds, such as industrial solvents and pesticides. These contaminants generally get into water through runoff from cropland or discharge from factories. EPA has set legal limits on 54 organic contaminants that are to be reported [40 CFR 141.61].

Radionuclides: Radioactive particles which can occur naturally in water or result from human activity. EPA has set legal limits on four types of radionuclides: radium-226, radium-228, gross alpha, and beta particle/photon radioactivity [40 CFR 141]. Violations for these contaminants are to be reported using the following three categories:

Gross alpha: SDWIS Contaminant Code 4000 for alpha radiation above MCL of 15 picocuries/liter. Gross alpha includes radium-226 but excludes radon and uranium.

Combined radium-226 and radium-228: SDWIS Contaminant Code 4010 for combined radiation from these two isotopes above MCL of 5 pCi/L.

Gross beta: SDWIS Contaminant Code 4101 for beta particle and photon radioactivity from man-made radionuclides above 4 millirem/year.

Reporting Interval: The reporting interval for violations to be included in the PWS Annual Compliance Report, which is to be submitted to EPA by July 1, 2010, is from January 1, 2010 through December 31, 2010.

SDWIS Code: Specific numeric codes from the Safe Drinking Water Information System (SDWIS) have been assigned to each violation type included in this report. The violations to be reported include exceeding contaminant MCLs, failure to comply with treatment requirements, and failure to meet monitoring and reporting requirements. Four-digit SDWIS Contaminant Codes have also been included in the chart for specific MCL contaminants.

SM: State monitoring requirement for contaminants not regulated under the Safe Drinking Water Act (Sodium)

Surface Water Treatment Rule: The Surface Water Treatment Rule establishes criteria under which water systems supplied by surface water sources, or ground water sources under the direct influence of surface water, must filter and disinfect their water [40 CFR 141, Subpart H]. Violations of the "Surface Water Treatment Rule" are to be reported for the following four categories:

Monitoring, routine/repeat (for filtered systems): SDWIS Violation Code 36 indicates a system's failure to carry out required tests, or to report the results of those tests.

Treatment techniques (for filtered systems): SDWIS Violation Code 41 shows a system's failure to properly treat its water.

Monitoring, routine/repeat (for unfiltered systems): SDWIS Violation Code 31 indicates a system's failure to carry out required water tests, or to report the results of those tests.

Failure to filter (for unfiltered systems): SDWIS Violation Code 42 shows a system's failure to properly treat its water. EPA will supply data for this violation code to the States.

Total Coliform Rule (TCR): The Total Coliform Rule establishes regulations for microbiological contaminants in drinking water. These contaminants can cause short-term health problems. If no samples are collected during the one-month compliance period, a significant monitoring violation occurs. States are to report four categories of violations:

Acute MCL violation: SDWIS Violation Code 21 indicates that the system found fecal coliform or E. coli, potentially harmful bacteria, in its water, thereby violating the rule.

Non-acute MCL violation: SDWIS Violation Code 22 indicates that the system found total coliform in samples of its water at a frequency or at a level that violates the rule. For systems collecting fewer than 40 samples per month, more than one positive sample for total coliform is a violation. For systems collecting 40 or more samples per month, more than 5% of the samples positive for total coliform is a violation.

Major routine and repeat monitoring: SDWIS Violation Codes 23 and 25 show that a system did not perform any monitoring. (One number is to be reported for the sum of violations in these two categories.)

Minor routine and repeat monitoring: SDWIS Violation Codes 24 and 26 show that a system did not did not comply with the required monitoring schedule, by failing to collect the required number of samples. . (One number is to be reported for the sum of violations in these two categories.)

Treatment Techniques: A water disinfection process that EPA requires instead of an MCL for contaminants that laboratories cannot adequately measure. Failure to meet other operational and system requirements under the Surface Water Treatment and the Lead and Copper Rules have also been included in this category of violation for purposes of this report.

Unfiltered Systems: Water systems that do not need to filter their water before disinfecting it because the source is very clean [40 CFR, Subpart H].

Violation: A failure to meet any state or federal drinking water regulation.

APPENDIX III

PUBLIC POOLS AND SPAS COMPLIANCE DATA

In 2013 HEALTH collected and analyzed a total of 759 water quality samples for bacteria, free residual chlorine, and pH

Swimming Pool Samples		Therapy Pool Samples	
Indoor	Outdoor	Indoor	Outdoor
373	176	190	20

Of the 759 samples collected the following is a breakdown of the violations recorded:

Bacterial Violations				Chlorine Violations				pH Violations			
Swim		Therapy		Swim		Therapy		Swim		Therapy	
Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor
44	23	31	2	257	105	107	11	93	58	83	10

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

THE HONORABLE
LINCOLN D. CHAFEE, GOVERNOR

MICHAEL FINE, M.D.
DIRECTOR
DEPARTMENT OF HEALTH

JUNE A. SWALLOW, P.E.
CHIEF
OFFICE OF DRINKING WATER QUALITY

Chapter 4 State-Specific Sampling Information

Connecticut Department of Public Health Laboratory

395 West Street
Rocky Hill, CT. 06067
Contact Number (24 hrs.): 860-509-8500
Fax Number: 860-509-8697

May 31, 2012

General Information

The Connecticut Department of Public Health (DPH) Laboratory is open from 8 A.M. to 4 P.M, Monday thru Friday (**See special Instructions for microbiology and inorganic chemistry**). Samples are delivered to the Receiving Room through the rear entrance, where the collector or courier needs to show a picture ID, sign in, and obtain an access key. Samples may be accepted on an emergency basis outside of normal working hours by contacting the appropriate department of the laboratory. Please refer to the ***New England States' Sample Collection & Preservation Guidance Manual for Drinking Water CD*** for detailed sample collection and preservation instructions for each of the biological and chemical substances for which public water supplies must test. This document summarizes national guidelines and procedures in accordance with stringent federal regulations. It is imperative that you comply with these instructions.

The Laboratory will supply sample collection containers and Temperature Control bottles and these should be used unless special arrangements have been made. Pictures of the containers supplied are on the following pages. Once collected, samples should be hand delivered or mailed to the Laboratory.

Field reagent blanks and duplicates (if included) are essential elements of our quality assurance program to insure the integrity, validity, accuracy, and precision of laboratory results. You are not charged for these samples.

Please be sure to accurately and thoroughly complete the sample requisition form containing the sample identification, date of collection, and other pertinent information. This form must have an appropriate address/account label. **Chain of Custody (CoC) samples require special handling and forms. Please contact the Laboratory, if you do not have the correct forms or the CoC Instructions.**

[HYPERLINK \l "TableofContents"]

Connecticut State-Specific Sampling Information, cont.

Environmental Microbiology
Stacey Kinney
860-509-8562

Test: Coliform/E. coli – uses Bac Bottle – Instructions:

1. Collector must use sample container (250 ml. sterile drinking water bottle) provided by the Connecticut DPH Laboratory.
2. To ensure processing that day, drinking water, and source water samples must be submitted by 3 PM Monday through Friday.
3. Source water must be analyzed within 8 hours of collection.
4. Source water must be shipped and held below 10° C.

[HYPERLINK \l "Microbiology"]

Bac Bottle →

Test: Heterotrophic Plate Count – uses Bac Bottle – Instructions:

1. Collector must use sample container (250 ml. sterile drinking water bottle) provided by the Connecticut DPH Laboratory.
2. Samples must be submitted by 3 P.M. Monday through Friday to ensure processing that day.
3. Drinking water must be analyzed within 8 hours of collection.
4. Drinking water must be shipped and held below 10° C.

[HYPERLINK \l "Microbiology"]

Inorganic Chemistry
Jack Bennett
860-509-8543

To ensure processing within the holding time, drinking water samples with a holding time ≤ 48 hours must be submitted by Noon Friday and the day before a Holiday.

1L LCR Bottle⟶

Lead and Copper Rule ("First Draw") Uses a 1L LCR bottle and, for School and Daycare water fountains only, a 250 ml LCR Bottle
Instructions: Follow instructions in Chapter 5 (SOP – Lead and Copper in Drinking Water in Residential Housing) [HYPERLINK \l "LeadCopper"]

250 ml LCR Bottle ⟶

Connecticut State-Specific Sampling Information, cont.

Cyanide – Uses 1L amber glass bottle
Instructions See Chapter 5. [HYPERLINK \l "Cyanide"]

← 1L amber glass Cyanide Bottle

Metals – Uses a Chem bottle
Instructions: Follow instructions in Chapter 5 (SOP – Metals and Minerals)
Except: Proceed from step 5.1.5 to 5.18. The pH will be checked at the laboratory and adjusted if necessary. [HYPERLINK \l "MetalsMinerals"]

Nitrate & Nitrite - Samples **Must** be submitted by Noon Friday and the day before a Holiday. Uses Chem Bottle.
Instructions: See Chapter 5. [HYPERLINK \l "AnionsInorganicDBP"]

Chem Bottle⟶

Inorganics – Uses Chem Bottle
Instructions: See Chapter 5. [HYPERLINK \l "AnionsInorganicDBP"]

Turbidity - Samples **Must** be submitted by Noon Friday and the day before a Holiday. Uses Chem Bottle
Instructions: See Chapter 5. [HYPERLINK \l "InorganicChemPhys"]

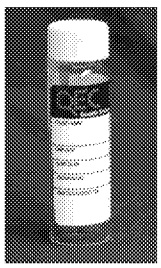
Special Chemistry
Susan Isch
860-509-8535

EPA Method 100.2, 600/4-83-043 – Uses Chem Bottle
Substance: Asbestos
Instructions: See Chapter 5. [HYPERLINK \l "Asbestos"]

Chem Bottle for Asbestos and Rad ⟶

EPA Methods: 900.0, 902,0, 903.0, 904.0 905.0, 906.0, 908.0
Substance: Gross Alpha (900.0), Gross Beta (900.0), Iodine 131 (902.0), Radium 226 & 228 (903.0 & 904.0), Strontium 89 & 90 (905.0), Tritium (906.0), Uranium (908.0). – Uses Chem Bottle
Instructions: See Chapter 5. [HYPERLINK \l "Radionuclides"]

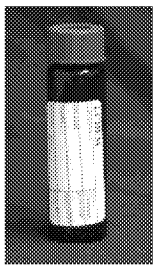
Connecticut State-Specific Sampling Information, cont.



EPA Methods 78-1 & 913.0 – Uses 40 ml clear vial
Substance: Radon in water
Holding time: Maximum holding time is 4 days.
Instructions: See CT DPH Radon Program Sampling Instructions [HYPERLINK \l "CTRadon"]

← 40 ml clear vial for Radon

Organic Chemistry
Mildred Carrasquillo
860-509-8547

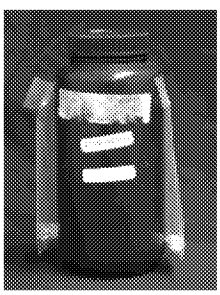


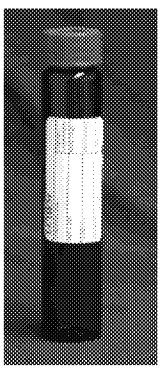
EPA Method 505 – Uses 40 ml amber vial
Compounds: Organochlorine Pesticides, Triazines and Polychlorinated Biphenyls (PCBs)
Instructions: See Chapter 5. [HYPERLINK \l "SOCs"] **Except:** Three 40 mL vials should now be submitted for each independent sample for analysis by EPA Method 505. Two field blanks should be included for each sampling site.

← 40 ml amber vial

Samples for EPA Methods 549.2 - preservatives are shipped in small vials that are pre-weighed, and pre-measured.

EPA Method 549.2 - Uses 1L Brown plastic bottle
Compound: diquat
Instructions: See Chapter 5. [HYPERLINK \l "SOCs"] **Except:** If chlorinated, add 100 mg/l sodium thiosulfate preservative. Samples which are biologically active must
be preserved by adding sulfuric acid to a pH=2. The preservatives are in the small vials attached to the bottle. 1L Brown plastic bottle⟶





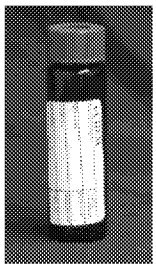
EPA Method 515.3 – Uses 60 mL amber vial supplied by the Laboratory
Compounds: Chlorinated acid herbicides (e.g. 2.4-C, Silvex, pentachlorophenol, picloram, etc.)
Instructions: See Chapter 5. [HYPERLINK \l "SOCs"] **Except:** Three 60 mL vials should now be submitted for each independent sample for analysis by EPA Method 515.3. Field blanks will be supplied by the Laboratory.

←60 mL amber vial

Connecticut State-Specific Sampling Information, cont.

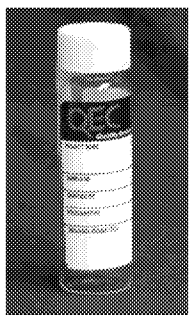
EPA Method 504.1 – Uses 40 ml amber vials
Compounds: EDB, DBCP, and 1,2,3- TCP
Instructions: See Chapter 5. [HYPERLINK \l "SOCs"] **Except:** Three 40 mL vials should now be submitted for each independent sample for analysis by EPA Method 504.1.
Two field blanks should be included for each sampling site.

40 ml amber vial →



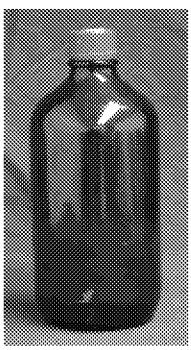
EPA Method 524.2 – Uses 40 ml clear vials (3 for samples, 2 for field blanks.
Compounds: Volatile Organic Compounds (VOCs - Quantity: 89)
Instructions: See Chapter 5. [HYPERLINK \l "VOCTHM"]

40 ml clear vial→



Samples for EPA Methods 525.2, 531.1, and 547 - If samples are not chlorinated, the preservatives are in the bottle or vial. If samples are chlorinated, preservatives are shipped in small vials that are pre-weighed, and pre-measured.

Small preservative vial →



EPA Method 525.2 – Uses 1L amber Bottle
Compounds: Benzo (a) pyrene, bis (2-ethylhexyl) phthalate and bis (2-ethylhexyl) adipate
Instructions: See Chapter 5. [HYPERLINK \l "SOCs"] **Except:** Add 50mg sodium sulfite from the small vial to Chlorinated samples; then 1.0 mL acid (1:1 HCL/reagent water) from the second small vial.
2 of the 1Liter amber glass bottles needed. Need 3 bottles to do MS/MSD. One field blank should be included for each sampling site.

← 1L amber Bottle

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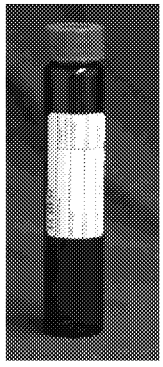
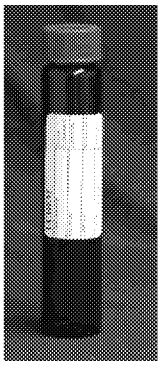
Connecticut State-Specific Sampling Information, cont.

EPA Method 531.1 - Uses 60 ml I-Chem amber vial
Compounds: N-methylcarbamoyloximes, N-methyl carbamates
(e.g. aldicarb, oxamyl, carbofuran, etc.)
Instructions: See Chapter 5. [HYPERLINK \l "SOCs"] **Except:** Add 48mg sodium thiosulfate from the small vial to Chlorinated samples; then 1.8mL monochloroaceticacid buffer from the second small vial. One field blank should be included for each sampling site.



60 ml I-Chem amber vial ⟶



EPA Method 547 - Uses 60 ml I-Chem amber vial
Compound: glyphosate
Instructions: See Chapter 5. [HYPERLINK \l "SOCs"]
Except: Add 6 mg sodium thiosulfate from the small vial to Chlorinated samples.
One field blank should be included for each sampling site.

⟵60 ml I-Chem amber vial

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Connecticut State - Specific Sampling Information, cont.

State of Connecticut Department of Public Health RADON PROGRAM

Sample Collection Protocol For Radon in Water

Sample collection containers:

Only glass containers sealed with TFE or foil-lined caps shall be used to collect samples of water for radon analysis using liquid scintillation.

Prior to sample collection:

A representative sample of the water in the distribution system or well should be collected by the homeowner or by a radon professional listed by the Connecticut Department of Public Health. Therefore, the aerator on the tap must be removed and the system should be flushed for an adequate amount of time (approximately 15 minutes).

There are two methods for collecting water samples of radon analysis using liquid scintillation. They are described below.

I. The Immersion Technique

(For laboratories that supply glass vials for water collection that do not contain a scintillation cocktail.)

After the purging period the sample is collected as follows, to minimize the loss of radon from the sample collected:

1. A length of flexible plastic tubing is attached to the spigot, tap, or other connection, and the free end of the tubing is placed at the bottom of a small container, or 300-600ml beaker. Make sure that the delivery tube does not let bubbles into the sample.

2. Fill the glass sample vial to prevent it from floating.

3. Fill the container or beaker, slowly, until the container overflows.

4. Place the delivery tubing two-thirds of the way into the glass vial, and fill the glass vial with water so that at least 50-100ml of water is displaced (i.e., water volume is displaced around two times). This will ensure that the bottle is flushed with fresh water.

5. After the bottle has been flushed, the tubing is removed from the vial, which can remain resting on the bottom of the container.

6. Carefully, place a TFE or foil-lined cap on the glass vial, *while it is still submerged.* If this is not possible, you may elect to carefully lift the vial out of the container or beaker and seal it using a TFE or foil-lined cap.

7. Once the sealed glass vial is removed from the bucket, it is inverted and checked for bubbles that would indicate headspace.

   a. If there are visible bubbles, empty the container and repeat the sampling collection.

Connecticut State-Specific Sampling Information, cont.

b. If there are no visible air bubbles, the outside of the sealed bottle is wiped dry, and the cap is sealed in place with electrical tape, wrapped clockwise.

8. After the sample bottle is sealed, a second (duplicate) sample is collected in the same fashion from the same container.

9. Record the date and time of the sample collection for each vial.

II. Syringe Technique

(For laboratories that supply radon-in-water test kits that contain the 'liquid scintillation cocktail'.)

After the purging period the sample is collected as follows, to minimize the loss of radon from the sample collected:

1. Attach a sampling funnel and tubing to the faucet.
2. Turn on the water and allow a steady flow for two minutes.
3. Slow the water flow and invert the funnel (mouth up). Adjust the flow so that the pool water in the funnel cavity is not turbulent.
4. Insert the needle of a 20 mL hypodermic syringe below the water surface, withdraw several mL of water, and discard. Repeat this rinse several times.
5. Withdraw 12-15 mL of water slowly to minimize air bubbles. Invert syringe to eject any air bubbles and retain 10 mL of water.
6. Place the syringe needle under the surface of an appropriate organic accepting liquid scintillation cocktail contained in a glass scintillation vial and slowly eject the water from the syringe into the cocktail.
7. Slowly withdraw the syringe and tightly cap the vial using a TFE or foil-lined cap.
8. After the glass vial is sealed, a second (duplicate) sample is collected in the same fashion.
9. Record the date and time of the sample collection for each vial.

Transport and analysis:
The sample(s), once received by the laboratory, should be allowed to equilibrate to room temperature before processing. Counting should begin within four days.

State of Connecticut
Department of Public Health
Radon Program
Phone: 860-509-7367
Fax: (860) 509-7378
http://www.dph.state.ct.us/BRS/Radon/radon_program.htm

Immersion technique excerpted from Standard Methods for the Examination of Water and Wastewater, 20th ed. (1998). *7500-Rn Liquid Scintillation Method*, pp. 7-39 through 7-42. CT DPH Radon Program March 8, 2005

New England States' Sample Collection & Preservation Guidance Manual For Drinking Water

2014
Revision 5.0
<Month Year>

Disclaimer

The intent of this guidance document is to provide the reader with a compilation of sampling instructions for many drinking water contaminants of concern. These instructions have been drawn from various EPA-approved methods of analysis and are presented in a consistent format for ease of use. This document itself does not impose legally binding requirements on states, authorized tribes or the regulated community and does not substitute for Safe Drinking Water Act (SDWA) requirements and EPA regulations; however, it does adhere to these requirements and regulations. It has been prepared by a workgroup including the federal, state, municipal and private sector participants listed below.

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- Robert Serabian, Quality Assurance Officer, Massachusetts Department of Environmental Protection Laboratory, Lawrence, MA

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ChapterTitle

5 Individual Sampling Standard Operating Procedures, (continued)

Inorganic Chemicals - Common Anions and Inorganic Disinfection By–Products
Analytes: Bromate, Bromide, Bromite, Chlorate, Chlorite, Fluoride, Combined Nitrate plus Nitrite, Nitrate, Nitrite, Ortho-phosphate, Sulfate
SOP: Common Anions and Inorganic Disinfection By-Products

Inorganic Chemicals - Inorganic Chemicals and Physical Tests
Analyte: Alkalinity, Chlorine, Chlorine Dioxide, Color, Conductivity, Hardness, Odor, pH, Surfactants (Foaming Agents), Turbidity
SOP: Inorganic Chemicals and Physical Tests

Inorganic Chemicals - Cyanide
Analyte: Cyanide
SOP: Cyanide

Inorganic Chemicals - Asbestos
Analyte: Asbestos
SOP: Asbestos

Inorganic Chemicals - SUVA
Analyte: SUVA
SOP: SUVA

Total Organic Carbon (TOC)
Rule: Stage 1 DDBPR, LT1

Analyte: Total Organic Carbon
SOP: Total Organic Carbon

Volatile Organics (VOC)
Rules: SDWA

Analytes: Volatile Organic Compounds (VOC)
Benzene, Carbon tetrachloride, o-Dichlorobenzene, p-Dichlorobenzene, 1,2-Dichlorethane, 1,1-Dichlorethylene, cis-Dichlorethylene, trans-Dichlorethylene, Dichloromethane, 1,2-Dichloropropane, Ethylbenzene, Styrene, Tetrachloroethylene, 1,2,4-Trichlorobenzene,

Chapter	Title
5	Individual Sampling Standard Operating Procedures, (continued)

Volatile Organics (VOC) [CONTINUED]

1,1,1-Trichlorethane, 1,1,2-Trichlorethane, Trichloroethylene, Toluene, Vinyl Chloride, Xylenes

SOP: Volatile Organic Compounds (VOCs) and Trihalomethanes (THMs)

Total Trihalomethanes (TTHMs)

Rules: SDWA, Stage 1 DDBPR, LT1

Analytes: **Trihalomethanes**
Chloroform, Bromodichloromethane, Chlorodibromomethane, Bromoform

SOP: Volatile Organic Compounds (VOCs) and Trihalomethanes (THMs)

Haloacetic Acids (HAA5)

Rules: SDWA, Stage 1 DDBPR, LT1

Analytes: Monochloroacetic acid, Dichloroacetic acid, Trichloroacetic acid, Monobromoacetic acid, Dibromoacetic acid

SOP: Haloacetic Acids (HAA5)

Synthetic Organic Chemicals (SOCs)

Rules: SDWA

SOCs - Pesticides/PCB's

Analytes: Chlordane, Endrin, Heptachlor, Heptachlor epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, Lindane, Methoxychlor, PCBs (as Aroclors), Simazine, Toxaphene

SOP: Synthetic Organic Chemicals (SOCs)

SOCs - Herbicides

Analytes: 2,4-D, 2,4,5-TP (Silvex), Dinoseb

SOP: Synthetic Organic Chemicals (SOCs)

SOCs - Carbamates

Analytes: Aldicarb, Carbofuran, Oxamyl (Vydate)

SOP: Synthetic Organic Chemicals (SOCs)

SOCs - EDB/DBCP

Analyte: Ethlene Dibromide (EDB), Dibromochloropropane (DBCP)

SOP: Synthetic Organic Chemicals (SOCs)

ChapterTitle

5 Individual Sampling Standard Operating Procedures, (continued)

SOCs - Others

Analyte: Alachlor, Atrazine, Benzo(a)pyrene (PAH), Dalapon, Di(2-ethylhexl)adipate, Di(2-ethylhexyl)phthalate, Diquat, Dioxin (2,3,7,8-TCDD), Endothall, Glyphosate

SOP: Synthetic Organic Chemicals (SOCs)

Radionuclides

Rules: Radionuclides Rule

Analyte: Beta/photon emitters, Gross Alpha, Radium 226, Radium 228, Uranium, Radioactive Cesium, Radioactive Iodine, Radioactive Strontium 89 and 90, Tritium, Gamma Emitting Radionuclides

SOP: Radionuclides

Radon

Rules Proposed Radon Rule

Analyte: Radon

SOP: Radon

For **Connecticut**, the SOP is : CTRadon in the State Specific Instructions

Chapter One - Introduction to Common Sampling Manual

1.0 Introduction

This manual was first developed in 2000 by the EPA New England (Region 1) office of the U.S. Environmental Protection Agency and the New England States' Drinking Water Programs. The intent was to address the need for consistency in public drinking water sampling protocols across these states. This document is a complete revision of that manual.

1.1 Purpose of this Manual

This document was created to assist sampling personnel in collecting public drinking water samples using standard procedures that comply with federal guidelines.

1.2 Scope of Manual

The manual summarizes national guidelines and procedures for sampling ground water and surface water supplies for monitoring drinking water quality. Federal regulations set the minimum standards and regulations for the collection of samples and the monitoring of drinking water.

State regulations must be at least as stringent as federal regulations and may go beyond the minimum federal criteria. Therefore, to make sure that samples are taken in compliance with specific state requirements in the state where the samples will be taken, please refer to Chapter 5 of this document or contact your state drinking water program before samples are taken.

1.3 How to Use This Manual

This manual is comprised of five chapters. In this, the first chapter, an overview of the many aspects of sample collection is presented, along with some general guidance to make each sampling event safe for the sampler, representative of the sampling site, and in compliance with federal and state regulations.

The second chapter is devoted to definitions needed to understand the SOP's and other information included in this manual.

The third chapter contains information on sampling containers, preservatives, and holding times that relate to the contaminants for which samples are being collected.

The fourth chapter provides state-specific information relative to the templates and sampling procedures because each state may have slightly different requirements, especially in terms of laboratory paperwork (i.e., chain of custody forms), equipment (i.e., bottle type and size), etc. It also includes a list of the laboratory certification officers for each state and their web sites for lists of their certified labs, if any.

The fifth chapter includes detailed sample collection and preservation instructions for each of the biological and chemical substances for which public water supplies must test. (The drinking water regulated analytes associated with each sampling SOP are provided in the Table of Contents.) Each standard operating procedure (SOP) is a stand-alone document that can be removed from the manual and taken to the field to provide step-by-step instructions in taking a compliant sample. They are based upon sampling guidance given in the appropriate EPA (approved) methods. EPA-approved methods for drinking water analysis are listed in Chapter 40 of the Code of Federal Regulations (CFR), Part 141.

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2.0 Water System Responsibilities

In general, the water system is responsible for the following tasks in terms of monitoring:

- performing field tests (if applicable),
- properly collecting all necessary samples in compliance with state and federal regulations,
- completing sample paperwork,
- submitting samples to certified or accredited laboratories within allowed holding times,
- collecting samples for confirmation (if necessary) and
- providing payment for analyses,
- keeping records of sampling results.

Although the water system may designate another party (such as the certified operator) to submit samples, it is ultimately the responsibility of the system owner to make sure the samples are taken properly and the results are submitted to the state program.

If samples are incorrectly taken or preserved, analyzed by uncertified (or unaccredited) laboratories, submitted beyond appropriate holding times, submitted with incomplete or inappropriate paperwork, or taken from inappropriate sampling sites, then the samples will be deemed unacceptable and rejected. Failure to submit valid test results to the state program within the required compliance period (because samples have been rejected by the laboratory and not analyzed) may result in a monitoring violation.

3.0 General Sampling Requirements

3.1 Sampler Requirements

3.1.1 In some states, only water supply program staff are authorized to collect compliance samples. Other states require that the sampler be certified. Check with your state drinking water program for its specific requirements or see Chapter 4 of this manual.

3.1.2 Before collecting any samples, all samplers should receive thorough training in proper sampling protocol. This training should include segments on proper procedures for storage and filling of sample containers, handling of preservatives, safety protocols, cleaning of sampling and field equipment, disposal of excess preservatives, and packaging and shipping requirements. Training may be offered by state drinking water programs or other sources. Contact the state laboratories at the numbers given in Chapter 4 for further information.

3.1.3 Measuring devices, such as pH or conductivity meters, used for field monitoring must be maintained and calibrated daily following the EPA-approved analytical methods and the manufacturers' instructions. The calibration standards used must be within their expiration dates and free of suspended matter. Probes must be washed with deionized water after each use and stored according to instructions. Other equipment items used to collect samples also must be rinsed with deionized water and kept clean between sampling events to prevent contamination of the samples.

3.1.4 Appropriate sample containers must be used. Generally, your laboratory will provide sample containers that have been specially prepared, depending on the end use (e.g., bacteria bottles are sterilized, metals containers are acid washed, glass vials used for VOCs are washed and oven-dried, and bottles used for SOCs are washed and triple-rinsed with organic solvents). These containers should not be opened until the actual sampling event. Sampling containers that have been compromised in any way, e.g., by being touched on the threads or the interior surfaces, must not be used. Chapter 3 provides information on containers, preservatives, and holding times.

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3.2 Laboratory Requirements

3.2.1 Only laboratories certified (accredited) by their resident state's laboratory certification (accreditation) program or state/federal laboratories certified (accredited) by EPA are allowed to perform compliance testing for microbiology, inorganic, organic, and radiochemistry parameters. Prospective clients should make sure that the laboratory, which will analyze their samples, is certified (accredited) for the specific parameters involved. Turbidity, chlorine residual, and pH monitoring are some of the exceptions to the laboratory certification (accreditation) requirements for performing analyses. These tests can be performed by any person acceptable to the state.

3.2.2 State principal laboratories or laboratories certified (accredited) by the state should supply containers, preservatives, and any trip blanks (field reagent blanks) for sampling. The containers, blanks, and preservatives used must be free of contaminants at the detection levels of each parameter of interest.

3.3 Number and Frequency of Drinking Water Samples

The number of drinking water samples to be collected is determined by each state drinking water program. In general, the state program will notify the water system in advance about the specific analyses required and the sampling time(s) and location(s). As mentioned previously, some states will have their staff take the required samples.

The federal drinking water regulations can be found in Section 40 of *The Code of Federal Regulations (CFR)*, Parts 141 and 143. Local and state regulations can be obtained from the appropriate local and state agencies.

3.4 Sampling Locations

The location for sample collection depends on:

- the water source,
- the analyses to be performed,
- the purpose for the testing and
- regulatory requirements.

Samples may be collected from the source prior to treatment, at the point of entry (before or after treatment), at the point of use (at the tap), or within the distribution system. For example, volatile organic compound (VOC) samples are usually taken at the entry point of the distribution system. (Total trihalomethane samples are taken at points within the system as determined by the Stage 2 Disinfectants and Disinfectant Byproducts Rule.) Lead and copper samples are taken at the point of use. The appropriate sampling point is determined by each state agency based on the criteria listed above. Many states assign sampling sites for each type of test. In the absence of state-approved sampling sites, samples should be taken at an appropriate entry or distribution point to the system.

3.5 Paperwork Submitted with Samples

Appropriate paperwork must accompany all samples to the laboratory. Each state requires specific information to identify the sample, the sampling time, and the sampling location. Forms for providing this information can be obtained from your state program. As a reminder, the submittal of any paperwork that is incomplete or inaccurate will result in the rejection of the sample by either the laboratory or the state program.

3.6 Analytical Methods

When samples are submitted to certified laboratories for analysis, the water system must notify the lab that the samples are for drinking water compliance purposes to ensure that appropriate methods are used and

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that the data are transmitted to the state drinking water program. (Only EPA-approved methods of analysis can be used.)

3.7 Quality Control Measures

3.7.1 *Field duplicates*. It is important for samplers to demonstrate proper sampling techniques by taking field duplicate samples on a regular basis. Field duplicates are two samples taken immediately one after the other from the same source in separate sample containers. Both will be analyzed by the laboratory, which will calculate the Relative Percent Difference between the results. This is a measure of the overall precision of analysis. Field duplicates should be collected for least 10% of all samples and more often when only small batches of samples are taken per sampling event.

3.7.2 *Extra volumes for lab QC measures.* Laboratories routinely perform quality control procedures, such as the analysis of spiked samples and the analysis of laboratory duplicates, which require extra volumes of samples. For this reason samplers are encouraged to take extra sample volumes for at least 10% of their sampling activities so that the laboratories can perform these vital QC procedures. (These extra volumes should be provided in addition to the field duplicates mentioned in the previous paragraph.)

3.8 Sampling and Safety Tips to Help Meet Requirements

3.8.1 All samples should be taken at faucets that are not threaded. In addition, faucet aerators and screens should be removed before taking samples, except for lead and copper compliance samples. Anything attached to the end of the faucet, e.g., hoses or filters, should be removed before taking samples.

3.8.2 Ice is not a packing material. Glass sample bottles should be wrapped in bubble wrap or other protective material to prevent breakage during shipping.

3.8.3 Chemical fumes from any source can potentially contaminate samples. Whenever sampling, the sampler should be conscious of his/her surroundings. For example, samples should not be taken near motor exhaust from any pump or vehicle because it will contaminate them. In addition, if sampling for volatile organic compounds (VOCs), it is not advisable to refuel vehicles either on the way to the site or while the samples are being transported to the lab.

3.8.4 Sample containers will be contaminated if the inside of the cap is touched or if the septum of a radon or VOC vial is reversed. If this should occur, the container must not be used. All containers must be kept closed until ready for use.

3.8.5 It is highly recommended that safety eye protection and gloves be worn while collecting samples. Such protective devices are readily available. **Many of the chemicals used to preserve samples are highly acidic or caustic. They can cause severe burns to eyes, skin, and clothing if they are splashed or spilled.** Sometimes these chemicals are added to the samples in the field. However, they may already be in the empty containers when they are obtained from the container provider. The gloves of choice should be phthalate-free made of nitrile. Nitrile gloves provide the best overall protection from most chemicals while still allowing dexterity. Many other types of gloves contain phthalates, which can contaminate samples for synthetic organic compounds (SOCs). Only phthalate-free gloves should be worn when collecting samples for SOCs. If such gloves are not available, the sampler must remove all gloves and wash his/her hands before collecting the samples (without gloves).

3.8.6 The sampling point(s) of each water system should be evaluated to determine the actual flushing time needed to remove the stagnant water before samples are taken. This is determined by measuring the temperature with a thermometer. Samples should not be taken until the temperature has stabilized. This is the minimum flushing time; it should be recorded for future use. Placing this information on a tag attached to the sampling faucet is suggested.

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3.8.7 A ballpoint pen or waterproof marker should be used when writing on sample tags to reduce bleeding of ink. If icing is required, samples should be placed on ice immediately after collection. When the weather is very warm, it may be advisable to pre-chill the samples in a refrigerator prior to packing on ice, this avoids depleting the ice to drop the temperature so it lasts longer. Placing filled sample containers in zip lock plastic bags prior to icing helps with sample organization, avoids wet sample tags, and results in less confusion when the samples reach the laboratory.

3.8.8 Well pits, ditches, and below-ground pumping stations, pipe raceways and vault systems are extremely dangerous sources from which to collect samples. Before entering confined spaces of any type, samplers must comply with the requirements of 29 CFR 1910.146, Permit Required Confined Space. Specially trained samplers and backup teams are required.

3.8.9 In general, preserved water samples are known environmental samples and are typically exempt from DOT and IATA (aircraft) shipping requirements. However, these regulations must be observed when shipping the preservatives or pre-preserved bottles via ground or air.

3.8.10 Sample containers that have preservatives in them should be labeled accordingly. The specific chemicals should be identified. This applies to empty containers to which preservatives are added before use as well as containers filled with sample.

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Chapter 2 - Glossary

chain-of-custody form. A physical document stating the name of the individual having physical custody of samples from a sampling site, and the duration of that custody, from sample collection until sample analysis. Alternatively, a document or paper trail showing the collection, custody, control, transfer, analysis, and disposition of physical samples.

chlorine residual. The amount of chlorine remaining in water after application at some prior time; the difference between the total chlorine added and that consumed by oxidizable matter. See "free chlorine residual".

contaminant. A contaminant is any physical, chemical, biological, or radiological substance or matter present in any media at concentrations that may pose a threat to human health or the environment.

coliform. A group of bacteria found in the intestines of warm-blooded animals (including humans) and in plants, soil, air, and water. Fecal coliforms are a specific class of bacteria, which only inhabit the intestines of warm-blooded animals. Coliforms are easily culturable and therefore are used as an indicator for possible other pathogenic organisms. The presence of coliform is an indication that the water is polluted, and may contain pathogenic organisms.

dechlorination. The deliberate removal of chlorine from water. The partial or complete reduction of residual chlorine by any chemical or physical process.

deionized water. Water that has been passed through resins that remove all ions.

DOC. Dissolved Organic Carbon.

DPD (diethyl phenylene diamine) colorimetric test. A test for detecting the presence of free chlorine residual in water.

field blanks. Made by transferring deionized water to a sample container at the sampling site. Field blanks test for contamination due to the introduction through the sampling procedure and sampling environment.

free chlorine residual. Chlorine that remains in water after the chlorine demand is satisfied. The presence of a residual indicates sufficient chlorine was added to disinfect the water. A residual of 0.1 to 0.2 milligrams per liter of free chlorine should be measurable at the tap from a public water system disinfected with chlorine.

holding time. The time allowed between collection of samples from water sources for analysis and the processing of those samples.

Safe Drinking Water Act [SDWA] (Public Law 93-523). An amendment to the Public Health Service Act, which established primary and secondary quality standards for drinking water. The SDWA was passed in 1974 to protect public health by establishing uniform drinking water standards for the nation. In 1986, SDWA Amendments were passed that mandated the U.S. Environmental Protection Agency (EPA) to establish standards for 83 drinking water contaminants by 1992 and identify an additional 25 contaminants for regulation every 3 years thereafter.

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Surface Water Treatment Rule (SWTR). The Surface Water Treatment Rule (SWTR) was published in the Federal Register by the Environmental Protection Agency on June 29, 1989. Under the reauthorization of the Safe Drinking Water Act in 1996 the SWTR contains provisions that require disinfection and filtration for all public water systems that use surface water or a source that is ground water under the direct influence of surface water. Approved testing procedures for compliance can be found in the Standard Methods text or 40 CFR Part 141. Testing under the SWTR includes Turbidity, Heterotrophic Plate Count (Bacteria), Total Coliform and Fecal Coliform, Giardia Lamblia cysts, Legionella, and enteric viruses.

spiked samples. Samples to which a known quantity of a substance is added. The results of spiking a sample in the field or laboratory are usually expressed as percent recovery of the added material. Spiked samples provide a check of the accuracy of laboratory and analytical procedures.

SUVA. Specific Ultraviolet Absorbance

trip blanks. Test for cross-contamination during transit of samples. For each shipment of sample containers sent to the analytical laboratory, one container is filled with analyte-free water at the laboratory and is sealed. The blanks are transported to the site with the balance of the sample containers. They remain unopened. Otherwise, they are handled in the same manner as the other samples. The trip blanks are returned to the laboratory with the samples and are analyzed for the same constituents.

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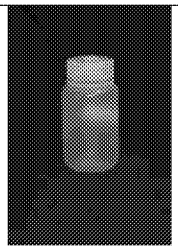
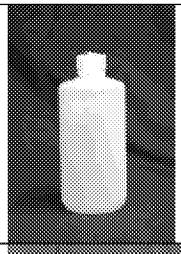
NEW ENGLAND STATES' DRINKING WATER SAMPLE
COLLECTION AND PRESERVATION GUIDANCE MANUAL

Chapter 3 - Sample Collection Containers (recommended), Preservation and Holding Time for Drinking Water Quality Tests Performed for Public Water Supplies

All samples for Inorganic and Organic Tests should be preserved between 0°C to 6°C.
All Microbiological Samples should be preserved between 0°C and10°C. **Do not freeze.**
(Check program for the required number of sample aliquots to collect for each sample.)
Additional containers are required when sample aliquots are collected for Matrix Spike and Duplicates.

TEST	CONTAINER TYPE		PRESERVATIVE IN BOTTLE	HOLD TIME
Bacteria Coliform, Heterotrophic, E. coli, Enterococci, Coliphage		125 ml plastic with sterile seal Must be filled at least 100 mL	Sodium thiosulfate pellet	8 hours SWTR - Total/ Fecal Coliform, Heterotrophic 30 hours Coliform, E.coli, Enterococci, 48 hours Coliphage
Common Anions and Disinfectant By-Products Bromide, Chloride, Fluoride, Nitrate-N, Nitrite-N, 0-Phosphate -P, Sulfate		250 mL plastic or glass Chlorite must be opaque	None added	28 days Bromide, Chlorate, Fluoride, Nitrate/ Nitrite, Sulfate Chloride 14 days Chlorite 48 hours Nitrite, Nitrate O-Phosphate
Nitrate/Nitrite Combined, Bromate, Chlorate, Chlorite			For Nitrate/Nitrite Combined - 3 mL conc. Sulfuric Acid Bromate, Chlorate, Chlorite - 0.1 mL 5% EDTA per 100 mL	
Lead and Copper (Lead and Copper Rule)		1L plastic or glass 250 mL plastic or glass for school and daycare fountains	1 mL 1:1 nitric acid may be added in the field or by the lab after receipt of the sample.	14 days (6 months once preserved in field or lab). Must be acidified a minimum of 16 hours before analysis.

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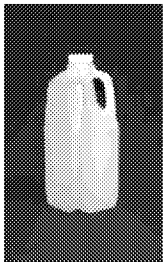
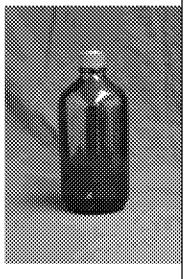
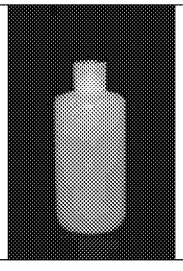
TEST	CONTAINER TYPE		PRESERVATIVE IN BOTTLE	HOLD TIME
Metals and Minerals		500 mL plastic	3 mL conc. Nitric Acid (to pH < 2)	6 Months Must be acidified a minimum of 16 hours before analysis.
Inorganic Compounds and Unregulated Physical Tests Alkalinity, Asbestos, Chlorine Chlorine Dioxide, Color, Conductivity, Hardness, Odor, Oxygen, Diss., pH, Solids, Surfactants, SUVA, Turbidity	 	½ gallon plastic or 2 - 1L glass	Hardness Nitric or Sulfuric Acid to pH < 2 Others: None Added	Chlorine, Chlorine dioxide, Oxygen, dissolved and pH: ASAP Odor: 24hr Asbestos, Color, Surfactants, SUVA, Turbidity: 48hr Total Dissolved Solids: 7 days Alkalinity: 14 days Others: 28 days
Cyanide		1L plastic	2ml 10N NaOH. (Only if no chlorine) Check chlorine in field. If positive add 0.1 g ascorbic acid and shake until dissolved. Then add NaOH.	14 days

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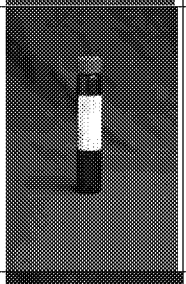
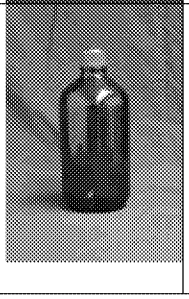
TEST	CONTAINER TYPE		PRESERVATIVE IN BOTTLE	HOLD TIME
Volatile Organic Compounds (VOC)		3 - 40 mL glass vials with Teflon septa. Need 3 vials to do MS/MSD.	0.25 mL 1:1 HCl If chlorinated first add 25 mg ascorbic acid to the vials, then add HCl to the sample.	14 days
Ethylene dibromide (by EPA 504.1) and Pesticides (by EPA 505)		2- 40 mL glass vials with Teflon septa. Need 3 vials to do MS/MSD.	3 mg sodium thiosulfate	14 days (Heptachlor – 7 days)
Haloacetic acids (HAA5)		2-60 mL amber glass vials with Teflon septa. Need 3 vials to do MS/MSD.	6 mg ammonium chloride	Method 552.1: 28 days Method 552.2: 14days
Total Trihalomethanes (TTHM)		2 - 40 mL glass vials with Teflon septa. Need 3 vials to do MS/MSD.	3 mg sodium thiosulfate	14 days
Semi-Volatile Organics (including pesticides), and Dioxin		2-1Liter amber glass bottles Need 3 vials to do MS/MSD.	2mLs HCl, pH2 If chlorinated first add 40mg sodium sulfite to bottle, then HCl to the sample.	14 days

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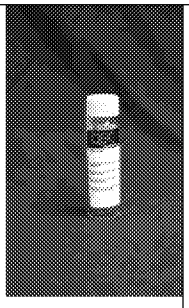
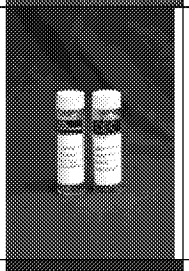
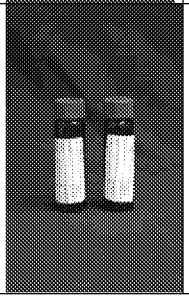
TEST	CONTAINER TYPE		PRESERVATIVE IN BOTTLE	HOLD TIME
Carbamates		1- 40 mL glass vial with Teflon septa	50 mg monochloroaceticacid buffer or potassium dihydrogen citrate If chlorinated 5 mg sodium sulfate and monochloroacetic acid buffer or potassium dihydrogen citrate	14 days
Glyphosate		1- 40 mL glass vial with Teflon septa	3 mg sodium thiosulfate	14 days
Herbicides		2 – 40 mL glass vials with Teflon septa. Need 3 vials to do MS/MSD.	0.25mL HCl, pH2 If chlorinated first add 4 mg sodium sulfite to the vials, then HCl to the sample.	14 days
Total Organic Carbon		2 – 40 mL amber glass vials with Teflon septa. Need 3 vials to do MS/MSD.	0.5 mL 9N sulfuric acid (to pH<2)	28 days

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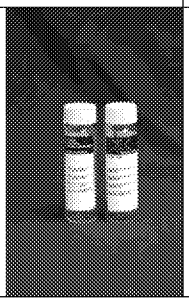
TEST	CONTAINER TYPE		PRESERVATIVE IN BOTTLE	HOLD TIME
Radionuclides Beta/photon emitters, Gross Alpha, Radium 226, Radium 228, Uranium, Radioactive Cesium, Iodine, Strontium 89 and 90, Tritium, Gamma Emitting (Barium-133, Cesium-134 & 137, Cobalt-60, and Zinc-65) Radionuclides		½ gallon plastic jug	None Added	5 days (6 months once preserved in lab)
Radon CT Radon		2 – 40 mL glass vial with Teflon septa	None Added	4 days (ASAP)

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Chapter 4 State-Specific Sampling Information

Connecticut Department of Public Health Laboratory

395 West Street
Rocky Hill, CT. 06067
Contact Number (24 hrs.): 860-509-8500
Fax Number: 860-509-8697

May 31, 2012

General Information

The Connecticut Department of Public Health (DPH) Laboratory is open from 8 A.M. to 4 P.M, Monday thru Friday (**See special Instructions for microbiology and inorganic chemistry**). Samples are delivered to the Receiving Room through the rear entrance, where the collector or courier needs to show a picture ID, sign in, and obtain an access key. Samples may be accepted on an emergency basis outside of normal working hours by contacting the appropriate department of the laboratory. Please refer to the ***New England States' Sample Collection & Preservation Guidance Manual for Drinking Water CD*** for detailed sample collection and preservation instructions for each of the biological and chemical substances for which public water supplies must test. This document summarizes national guidelines and procedures in accordance with stringent federal regulations. It is imperative that you comply with these instructions.

The Laboratory will supply sample collection containers and Temperature Control bottles and these should be used unless special arrangements have been made. Pictures of the containers supplied are on the following pages. Once collected, samples should be hand delivered or mailed to the Laboratory.

Field reagent blanks and duplicates (if included) are essential elements of our quality assurance program to insure the integrity, validity, accuracy, and precision of laboratory results. You are not charged for these samples.

Please be sure to accurately and thoroughly complete the sample requisition form containing the sample identification, date of collection, and other pertinent information. This form must have an appropriate address/account label. **Chain of Custody (CoC) samples require special handling and forms. Please contact the Laboratory, if you do not have the correct forms or the CoC Instructions.**

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Connecticut State-Specific Sampling Information, cont.

Environmental Microbiology
Stacey Kinney
860-509-8562

Test: Coliform/E. coli – uses Bac Bottle – Instructions:

1. Collector must use sample container (250 ml. sterile drinking water bottle) provided by the Connecticut DPH Laboratory.
2. To ensure processing that day, drinking water, and source water samples must be submitted by 3 PM Monday through Friday.
3. Source water must be analyzed within 8 hours of collection.
4. Source water must be shipped and held below 10° C.

Microbiology

Bac Bottle →

Test: Heterotrophic Plate Count – uses Bac Bottle – Instructions:

1. Collector must use sample container (250 ml. sterile drinking water bottle) provided by the Connecticut DPH Laboratory.
2. Samples must be submitted by 3 P.M. Monday through Friday to ensure processing that day.
3. Drinking water must be analyzed within 8 hours of collection.
4. Drinking water must be shipped and held below 10° C.

Microbiology

Inorganic Chemistry
Jack Bennett
860-509-8543

To ensure processing within the holding time, drinking water samples with a holding time ≤ 48 hours must be submitted by Noon Friday and the day before a Holiday.

1L LCR Bottle⟶

Lead and Copper Rule ("First Draw") Uses a 1L LCR bottle and, for School and Daycare water fountains only, a 250 ml LCR Bottle

Instructions: Follow instructions in Chapter 5 (SOP – Lead and Copper in Drinking Water in Residential Housing) Lead and Copper (Lead and Copper Rule)

250 ml LCR Bottle ⟶

Connecticut State-Specific Sampling Information, cont.

Cyanide – Uses 1L amber glass bottle
Instructions See Chapter 5. Cyanide

← 1L amber glass Cyanide Bottle

Metals – Uses a Chem bottle
Instructions: Follow instructions in Chapter 5 (SOP – Metals and Minerals)
Except: Proceed from step 5.1.5 to 5.18. The pH will be checked at the laboratory and adjusted if necessary. Metals and Minerals

Nitrate & Nitrite - Samples **Must** be submitted by Noon Friday and the day before a Holiday. Uses Chem Bottle.
Instructions: See Chapter 5. Anions & Inorganic DBP

Chem Bottle⟶

Inorganics – Uses Chem Bottle
Instructions: See Chapter 5. Anions & Inorganic DBP

Turbidity - Samples **Must** be submitted by Noon Friday and the day before a Holiday. Uses Chem Bottle
Instructions: See Chapter 5. Inorganic Chemicals and Physical Tests

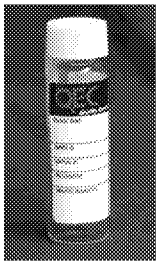
Special Chemistry
Susan Isch
860-509-8535

EPA Method 100.2, 600/4-83-043 – Uses Chem Bottle
Substance: Asbestos
Instructions: See Chapter 5. Asbestos

Chem Bottle for Asbestos and Rad ⟶

EPA Methods: 900.0, 902,0, 903.0, 904.0 905.0, 906.0, 908.0
Substance: Gross Alpha (900.0), Gross Beta (900.0), Iodine 131 (902.0), Radium 226 & 228 (903.0 & 904.0), Strontium 89 & 90 (905.0), Tritium (906.0), Uranium (908.0). – Uses Chem Bottle
Instructions: See Chapter 5. Radionuclides

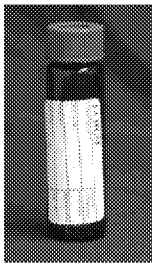
Connecticut State-Specific Sampling Information, cont.



EPA Methods 78-1 & 913.0 – Uses 40 ml clear vial
Substance: Radon in water
Holding time: Maximum holding time is 4 days.
Instructions: See CT DPH Radon Program Sampling Instructions CT Radon

← 40 ml clear vial for Radon

Organic Chemistry
Mildred Carrasquillo
860-509-8547

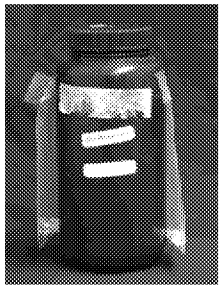


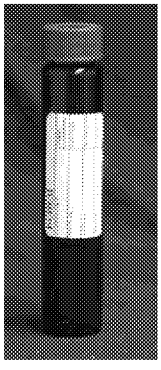
EPA Method 505 – Uses 40 ml amber vial
Compounds: Organochlorine Pesticides, Triazines and Polychlorinated Biphenyls (PCBs)
Instructions: See Chapter 5. SOCs **Except:** Three 40 mL vials should now be submitted for each independent sample for analysis by EPA Method 505. Two field blanks should be included for each sampling site.

← 40 ml amber vial

Samples for EPA Methods 549.2 - preservatives are shipped in small vials that are pre-weighed, and pre-measured.

EPA Method 549.2 - Uses 1L Brown plastic bottle
Compound: diquat
Instructions: See Chapter 5. SOCs **Except:** If chlorinated, add 100 mg/l sodium thiosulfate preservative. Samples which are biologically active must be preserved by adding sulfuric acid to a pH=2. The preservatives are in the small vials attached to the bottle. 1L Brown plastic bottle→





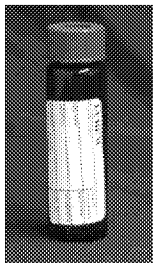
EPA Method 515.3 – Uses 60 mL amber vial supplied by the Laboratory
Compounds: Chlorinated acid herbicides (e.g. 2.4-C, Silvex, pentachlorophenol, picloram, etc.) Instructions: See Chapter 5. SOCs **Except:** Three 60 mL vials should now be submitted for each independent sample for analysis by EPA Method 515.3. Field blanks will be supplied by the Laboratory.

←60 mL amber vial

Connecticut State-Specific Sampling Information, cont.

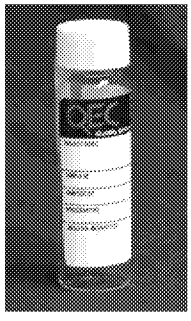
EPA Method 504.1 – Uses 40 ml amber vials
Compounds: EDB, DBCP, and 1,2,3- TCP
Instructions: See Chapter 5. SOCs **Except:** Three 40 mL vials should now be submitted for each independent sample for analysis by EPA Method 504.1. Two field blanks should be included for each sampling site.

40 ml amber vial →



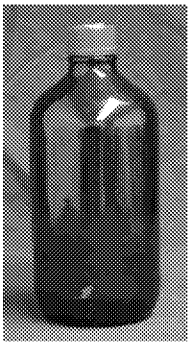
EPA Method 524.2 – Uses 40 ml clear vials (3 for samples, 2 for field blanks.
Compounds: Volatile Organic Compounds (VOCs - Quantity: 89)
Instructions: See Chapter 5. VOCTHM

40 ml clear vial→



Samples for EPA Methods 525.2, 531.1, and 547 - If samples are not chlorinated, the preservatives are in the bottle or vial. If samples are chlorinated, preservatives are shipped in small vials that are pre-weighed, and pre-measured.

Small preservative vial →



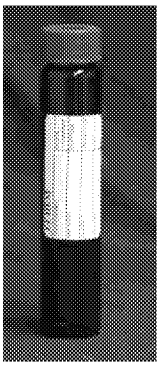
EPA Method 525.2 – Uses 1L amber Bottle
Compounds: Benzo (a) pyrene, bis (2-ethylhexyl) phthalate and bis (2-ethylhexyl) adipate
Instructions: See Chapter 5. SOCs **Except:** Add 50mg sodium sulfite from the small vial to Chlorinated samples; then 1.0 mL acid (1:1 HCL/reagent water) from the second small vial.
2 of the 1Liter amber glass bottles needed. Need 3 bottles to do MS/MSD. One field blank should be included for each sampling site.

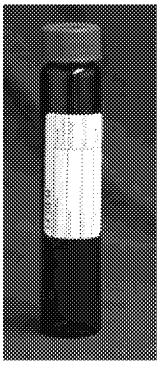
← 1L amber Bottle

Connecticut State-Specific Sampling Information, cont.

EPA Method 531.1 - Uses 60 ml I-Chem amber vial
Compounds: N-methylcarbamoyloximes, N-methyl carbamates
(e.g. aldicarb, oxamyl, carbofuran, etc.)
Instructions: See Chapter 5. SOCs **Except:** Add 48mg sodium thiosulfate from the small vial to Chlorinated samples; then 1.8mL monochloroaceticacid buffer from the second small vial. One field blank should be included for each sampling site.

60 ml I-Chem amber vial ⟶





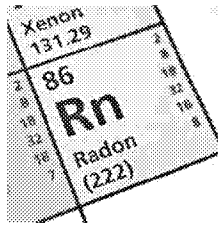
EPA Method 547 - Uses 60 ml I-Chem amber vial
Compound: glyphosate
Instructions: See Chapter 5. SOCs
Except: Add 6 mg sodium thiosulfate from the small vial to Chlorinated samples.
One field blank should be included for each sampling site.

⟵60 ml I-Chem amber vial

State of Connecticut Department of Public Health
ENVIRONMENTAL LABORATORY CERTIFICATION PROGRAM

Sample Collection Protocol for Radon in Water

Sample Collection Containers



Glass containers sealed with TFE or foil-lined caps shall be used to collect samples of water for radon analysis using liquid scintillation. Samples are to be collected in duplicate with either two 20 ml or two 40 ml glass vials.

Transport & Sampling Holding Time

Samples need to be received at the laboratory within 24 to 48 hours of collection. Holding time from time of collection to when counting begins is **four days**. Samples are to be transported in a cooler at a temperature of between 4°-6° C.

Sample Collection Procedures

The home's distribution system must be **flushed** for an adequate amount of time (**approximately 15 minutes**) prior to sample collection. There are three procedures for collecting water samples for radon analysis using liquid scintillation. These three collection procedures are described below:

I. The Immersion Technique – *preferred collection procedure*

(For laboratories that supply vials for water collection that do not contain a scintillation cocktail).

1. **Remove aerator from indoor sink faucet.** A length of flexible plastic tubing or section of hose is attached to the spigot, tap or other non-aerated faucet connection. The free end of the delivery tube is placed at the bottom of a small bucket, bowl or 300-600 ml beaker. Make sure that the delivery tube does not let bubbles into the samples. An outside faucet with a hose attached can be used to fill sample containers in a bucket.
2. Fill the bucket, bowl or beaker slowly until the container overflows.
3. Fill one of the sample vials to prevent it from floating and let it sink to bottom of the container.
4. With water flow still on, place the delivery tubing two-thirds of the way into the vial (for outside faucet, place hose over vial opening) and fill the vial under water so that at least 50-100 ml of water is displaced (i.e., water volume is displaced around two to three times). This will ensure that the vial is flushed with fresh water.
5. After the glass vial has been flushed, the delivery tube is placed back on the bottom of the container.

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6. Carefully place a TFE or foil-lined cap on the vial, sealing it ***while the vial is still submerged and with the water flow still on.***

7. Once the sealed vial is removed from the container, it is inverted and checked for bubbles that would indicate headspace.

   a. If there are visible bubbles, empty the container and repeat the sampling collection steps 3-7.

   b. If there are no visible air bubbles, the outside of the sealed bottle is wiped dry and the cap is sealed in place with electrical tape.

8. After the sample bottle is sealed, a second (duplicate) sample is collected in the same fashion from the same container.

9. Record the date and time of the sample collection for each vial.

II. Alternate Immersion Technique

(For laboratories that supply vials for water collection that do not contain a scintillation cocktail).

After the purging period, the sample is collected as follows to minimize the loss of radon from the sample collected:

1. An indoor sink faucet with the aerator removed is selected for a sampling source.

2. Prop up a large bowl under the faucet using an upturned bowl, pot or other container which is tall enough so that when the water is turned on and filling the bowl, the water level in the bowl is submersing the faucet outlet (refer to DIAGRAMS 1& 2).

3. Fill the bowl slowly until the container overflows. Keep the water flowing.

4. Fill one of the glass sample vials to prevent it from floating and let it sink to bottom of the container.

5. While the water is running into bowl and while the vial is submerged, invert vial to dump out contents and refill under water. Repeat inverting and refilling vial two to three more times. This will ensure that the vial is flushed with fresh water.

6. Carefully place a TFE or foil-lined cap on the glass vial, sealing it **while the vial is still submerged and with the water flow still on.**

7. Once the sealed vial is removed from the container, it is inverted and checked for bubbles that would indicate headspace.

   a. If there are visible bubbles, empty the container and repeat the sampling collection steps 4-7.

   b. If there are no visible air bubbles, the outside of the sealed bottle is wiped dry, and the cap is sealed in place with electrical tape.

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8. After the vial is sealed, a second (duplicate) sample is collected in the same fashion.
9. Record the date and time of the sample collection for each vial.

DIAGRAM 1

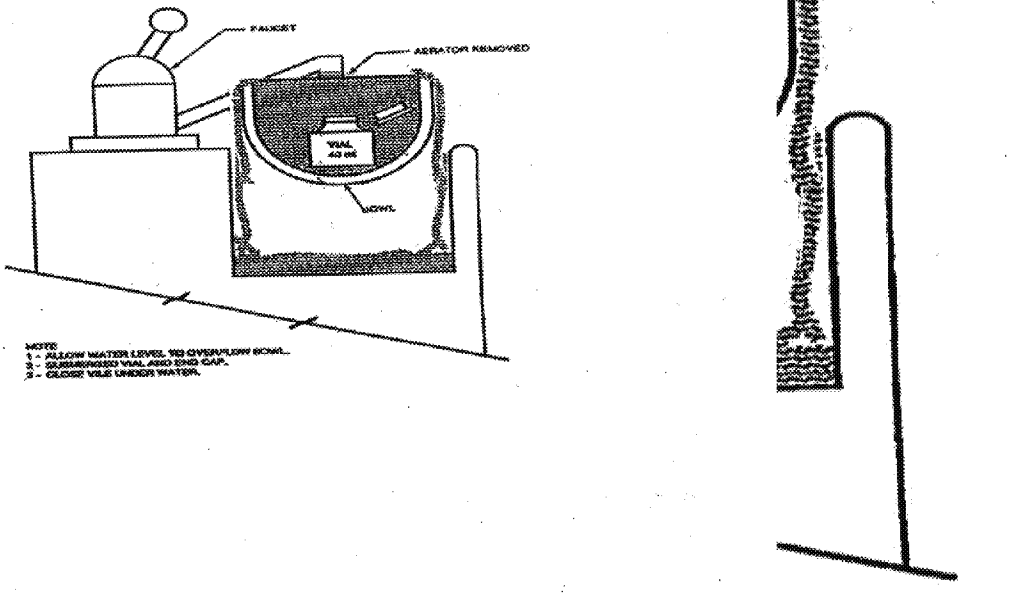

DIAGRAM 2

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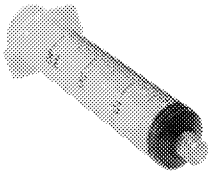
III. Syringe Technique

(For laboratories that supply radon-in-water test kits that contain the liquid scintillation cocktail)



After the purging period, the sample is collected as follows to minimize the loss of radon from the sample collected:

1. Attach a sampling funnel and tubing to the **non-aerated** faucet.
2. Turn on the water and allow a steady flow for two minutes.
3. Slow the water flow and invert the funnel (mouth up). Adjust the flow so that the pool water in the funnel cavity is not turbulent.
4. Insert the needle of a **20 ml** hypodermic syringe below the water surface, withdraw several ml of water and discard. Repeat this rinse several times.
5. Withdraw 12-15 ml of water slowly to minimize air bubbles. Invert syringe to eject any air bubbles and retain 10 ml of water.
6. Place the syringe needle under the surface of an appropriate organic accepting liquid scintillation cocktail contained in a 20 ml glass scintillation vial and slowly eject the water from the syringe into the cocktail.
7. Slowly withdraw the syringe and tightly cap the vial using a TFE or foil-lined cap.
   Seal with electrical tape.
8. After the glass vial is sealed, a second (duplicate) sample is collected in the same fashion.
9. Record the date and time of the sample collection for each vial.

For More Information, Contact: Dermot Jones, Certification Officer
State of Connecticut Department of Public Health
Environmental Laboratory
Certification Program
(860) 509-7389

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State-Specific Sampling Information

Maine
Department of Health and Human Services
Maine Centers for Disease Control
Division of Environmental Health
Drinking Water Program

July 05, 2007

Contact number: 207-287-2070

General Instructions

All samples submitted to the Health and Environmental Testing Laboratory (HETL) for analysis must be in HETL containers unless prior arrangements have been made. The information on the sample data sheets must be as complete as possible and the sheets returned with the samples. **Be sure to indicate the date and time the sample was collected.**

Sample kits may be purchased or samples may be sent to the laboratory through the US postal mail or private carrier to: HETL, 221 State St, Augusta, Maine 04333-0012. Sample kits may also be purchased and delivered to the lab in person. Laboratory hours are Monday through Friday 7:30 AM-5:00 PM.

If you plan to mail your samples, check with the post office before sampling to determine what time the mail is picked up. Collect and mail the samples as close to the pick-up time as possible because the age of a water sample has direct bearing on the accuracy of the laboratory results. Samples should be shipped by mail on Monday, Tuesday, or Wednesday to avoid possible weekend delay. Samples may be brought to the laboratory at 221 State Street anytime Monday through Friday between the hours of 7:30 AM and 5:00 p.m. Samples requiring microbiological analysis should, whenever possible, be delivered before 4:00 p.m.

Water samples for microbiological analysis that arrive at the laboratory 30 hours or more after sample collection will not give a true representation of the microbiological quality of the water and will be rejected. **If your microbiological sample arrives 30 hours or more after collection, your sample will be rejected and a replacement kit will be sent to you.**

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Maine State-Specific Sampling Information - continued

Specific Instructions

1. Coliform Sampling

Samples must be collected at locations as specified in the water systems' "Sample Site Plan". Samples not collected from the correct site will not be accepted. Please call the Maine Drinking Water Program if you need to complete a Sample Site Plan. The Maine Drinking Water Program collects most of the coliform recheck samples and samples to remove a "Boil Water Order" (BWO), for small water systems. Please contact your compliance officer at the Drinking Water Program before collecting any follow-up (to coliform positive) samples or samples to remove a BWO.

2. Volatile Organics

Maine has a standard for MTBE. All Volatile Organic samples (VOCs) must be analyzed utilizing EPA Method 524.2. This is the only acceptable method for VOCs.

3. Herbicides, Pesticides, PCBs, and Semi-volatile organics

Do not collect any herbicide, pesticide, PCB or semi-volatile organics (SVOC) samples without first calling your compliance officer or contact the Drinking Water Program. Maine has a waiver program for these tests.

4. Lead and Copper

All lead and copper testing must be accompanied by a 141A form, even if the laboratory calculates your 90th percentiles. Please contact your lab or your compliance officer at the Drinking Water Program if you need a 141A form. Remember to indicate the time and date of collection and the last time the water was used. This helps to ensure the water was not used for the required six hours.

5. Sample collection locations.

Coliform, lead and copper, fluoride and disinfection by-products samples are collected in the distribution system. All other samples are collected after treatment and before distribution. Please call your compliance officer at the Drinking Water Program if you are not sure where to collect a sample.

State-Specific Sampling Information

Massachusetts
Department of Environmental Protection

June 21, 2007

Routine Compliance Monitoring Samples

Massachusetts-certified commercial and municipal laboratories perform the analysis of all drinking water samples collected for routine compliance monitoring purposes in the Commonwealth of Massachusetts. Massachusetts public water suppliers, and other entities requiring drinking water analysis must contract a commercial or municipal laboratory certified by the Massachusetts Department of Environmental Protection (MassDEP), Laboratory Certification Office (LCO), Division of Environmental Analysis (DEA), Senator William X. Wall Experiment Station (WES), to perform these analyses. An on-line searchable database of MassDEP-certified laboratories is available at:

http://public.dep.state.ma.us/Labcert/labcert.aspx

The information is updated daily.

The certified laboratory contracted to perform the analysis of drinking water samples will provide all the necessary sample containers, preservation reagents, and sampling instructions. The sampling instructions provided to sample collectors will be those in Chapter 5 of this Manual.

Special Compliance Monitoring and Enforcement Samples

All drinking water samples collected by Massachusetts DEP regional and program staff for special compliance monitoring purposes or enforcement actions are analyzed by the DEA/WES, Lawrence, MA. MassDEP regions and programs needing such analytical services from DEA/WES must contact via telephone or e-mail (preferred) Robert Serabian (DEA/WES Quality Assurance Officer) or Dr. Oscar Pancorbo (DEA/WES Director) to schedule the work in the MassDEP Laboratory. Once the project has been scheduled, DEA/WES will prepare the appropriate sample containers, required sample preservation reagents, sample ID tags, sample tracking/chain-of-custody form, sample cooler, any other sampling equipment needed, and sampling instructions. The sampling instructions provided will be those in Chapter 5 of this Manual. The cooler with the necessary supplies and instructions are then either picked up at DEA/WES in Lawrence, or sent by MassDEP courier or by private courier service to the MassDEP regional or Boston office in time for the sampling event. Ice and ice packs are available at the MassDEP regional and Boston offices. Once the samples are collected, the coolers with the samples are driven by MassDEP regional or program staff, sent by MassDEP courier, or sent by private overnight courier service to DEA/WES (Lawrence) for laboratory analysis.

State-Specific Sampling Information

New Hampshire
Department of Environmental Services

May 2012

Based on the New England States' Sample Collection & Preservation Guidance Manual for Drinking Water, the State of New Hampshire has prepared a separate, state-specific document called the New Hampshire Sample Collection & Preservation Manual for Drinking Water. The NH edition draws on the common manual as a template, but incorporates state-specific details such as chemical groupings and State Laboratory-specific details into the body of the document. The drinking water program has requested that the private laboratories in NH edit each of the test templates relative to their lab's specific scheduling, bottle, and preservative criteria. New Hampshire's Sampling Manual will be used at system operator training sessions given by the Drinking Water and Groundwater Bureau, while the private laboratories will distribute their laboratory-specific versions to their clients.

Copies of the New Hampshire Drinking Water Sampling Manual are available through the NH the Drinking Water and Groundwater Bureau by call 603-271-2513 or from the NH Public Health Laboratories at 603-271-3445. The manual can also be downloaded from the web at http://des.nh.gov/organization/commissioner/pip/publications/co/documents/r-co-01-5.pdf under Sampling Information, Sample Collection & Preservation Manual (2011).

State-Specific Sampling Information

Rhode Island Department of Health
Office of Drinking Water Quality

August 7, 2007

Rhode Island-certified laboratories perform the analysis of all drinking water samples collected for compliance monitoring purposes. Public water supplies in Rhode may utilize the Rhode Island Department Division of Laboratories or contract with a Rhode Island-certified laboratory. Since Rhode Island certifies laboratories by both analyte and method of analysis, it is important to utilize a laboratory certified for the specific analytes the system is required to monitor, that the analyses are performed using an EPA approved method, and that the laboratory has Rhode Island certification for both the analyte and method. An on-line searchable database of Rhode Island-certified laboratories, which includes a listing of analytes and methods, is available at:

http://www.health.ri.gov/labs/waterlabs-instate.php

All samples collected by Rhode Island Office of Drinking Water Quality staff for routine and special monitoring are analyzed at the Rhode Island Department of Health Division of Laboratories, 50 Orms Street, Providence, RI 02904, which is a Rhode Island certified laboratory. The Office of Drinking Water Quality is responsible for complying with monitoring schedules for all public water systems sampled by Office of Drinking Water Quality staff.

When contracting with a commercial laboratory, the public water supply must provide that laboratory with the required monitoring schedule. Monitoring schedules are available to the public water supply from the Office of Drinking Water Quality, (401) 222-6867. The certified laboratory contracted to perform the analysis of drinking water samples will provide all the necessary sample containers, preservation reagents, and sampling instructions. The sampling instructions provided to sample collectors will be those in Chapter 5 of this Manual.

Specific instructions for compliance with the Total Coliform Rule (TCR):

All results reported to the Rhode Island Office of Drinking Water Quality must be reported on Rhode Island Office of Drinking Water Quality forms. Routine coliform samples are reported as Routine Original samples (RTOR). Fecal coliform positives must be reported to the Office of Drinking Water Quality by the end of that day or the next business day and the public notice must be provided within 24 hours. Total coliform positives must be reported no later than the next business day and public notification must be provided within 14 days for systems serving food and 30 days for those that do not. Systems with fecal coliform positives, and systems with total coliform positives that serve food, are required to boil water and/or provide an alternative source of water and ice. Monitoring violations must be reported within ten (10) days.

Rhode Island State-Specific Sampling Information - continued

If a routine sample is total coliform positive, the system must analyze the culture medium to determine if fecal coliforms are present, and must collect a set of repeat samples within 24 hours of being notified of the positive result. At least one (1) repeat sample must be collected from the sampling tap where the original positive sample was taken, reported as a Repeat Original sample (RPOR), and Repeat Other samples (RPOT) must be collected upstream and downstream within five (5) service connections. Systems that routinely collect more than one coliform sample per month must collect three (3) repeat samples; systems that collect one (1) or less per month must collect four (4) repeat samples. Systems with one total coliform positive during any monitoring period must collect five (5) samples the next month of operation.

Failures to comply with all other drinking water regulations must be reported within 48 hours.

State-Specific Sampling Information

Vermont Department of Health Laboratory
195 Colchester Avenue, P. O. Box 1125, Burlington, VT 05402-1125

July 16, 2007

Contact Information: 802-863-7637 (main)
800-660-9997 (within VT only)
802-863-7632 (fax)

Web Address: http://healthvermont.gov/enviro/ph_lab/lab.aspx (for water testing information, including Water Test Order Form (ADMIN 501) and Water Test Order Form Supplement (CHEM 909), as well as the Safe Water Resource Guide)

Generally, the laboratory supplies all sample containers unless other arrangements have been made with the Program Chiefs, the Laboratory Director or assigned designees.

You may purchase test kits and send samples to the laboratory through the mail; first-class mail is recommended to ensure delivery to the laboratory within the required timeframes (found on sampling instructions contained in test kit). You are welcome to come to the laboratory in person to purchase testing kits or to drop off samples. Business hours are Monday through Friday, 7:45 a.m. to 4:30 p.m.

Completely fill out the Water Sample Collection Information Form (CHEM 202) contained in the test kit, including the date and time of sample collection as this is required for testing.

If you are sending more than one sample, each sample must have its own Water Sample Collection Information form (CHEM 202) filled out. Make sure each bottle is labeled with its sampling location or some other identifying mark ("Sample A", "Sample B", etc.). Be sure to put the same identifying information on the corresponding form in the "Submitter's Remarks" section.

1.) Instructions for coliform testing:
Samples must be received by the laboratory as soon as possible, but no more than 30 hours after collection. Samples must be received by the laboratory Monday through Friday by 4 p.m. If you wish to get next-workday results, samples must be received before 4 p.m. Monday through Thursday. Results for samples received before 4 p.m. are available after 3 p.m. the following day.

2.) Instructions for all other drinking water testing:
Samples must be received by the laboratory within the timeframes specified on the sampling instructions included with the test kits. Samples must be received before 4 p.m. Monday through Friday; except those samples for nitrite and/or odor testing, which must be received before 4 p.m. Monday through Thursday and before 12 noon on Friday.

Some drinking water testing is offered only on certain dates during the year. The laboratory will communicate those times to affected water suppliers in our Water Test Order Form Supplement (CHEM 909) or in specific mailings when kits are ordered.

SOP - MICROBIOLOGY

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED. CONFIRM SCHEDULING AND INSTRUCTIONS WITH LAB BEFORE SAMPLING. WASH HANDS, WEAR SAFETY GLASSES, AND CLEAN NITRILE GLOVES.

Refer to State-Specific Instructions-: CT, ME, MA, NH, RI, VT

1. **Applicable Parameters:** Total Coliforms, Fecal Coliforms, Escherichia coli, Enterococci, Heterotrophic Bacteria (HPC), Male-Specific and Somatic Coliphage (See 40 CFR Part 141 for the most up to date list of approved methods.)

2. **Sample Location:** A state-approved location. If one has not been designated, select an appropriate location that is representative of the distribution system. Avoid threaded faucets.

3. **Sampling materials:**
   3.1. Containers: Sterile glass or plastic bottles with a minimum capacity of 125mL.
   3.2. Preservative: Sodium thiosulfate in powder or tablet; ice
   3.3. Other: Labels, marker, safety glasses, and clean disposable gloves.

4. **Safety Concerns:**
   4.1. Before collecting samples, all samplers must receive thorough training in proper handling of chemical preservatives and safety protocols so they are aware of the associated dangers and to determine appropriate safety precautions and first aid, should it be necessary.
   4.2. Sample bottles that have preservatives in them should be labeled accordingly. The specific chemicals should be identified.

5. **General Sample Collection Procedure:**
   5.1. All microbiological parameters
      5.1.1. Complete sample tag and sample collection form, using waterproof ink. Proper identification, including the date and time of collection must be submitted.
      5.1.2. Remove aerator, screen, and all attachments from the faucet.
      5.1.3. If necessary, a lint free cloth dampened with bleach and water may be used to clean the faucet rim.
      5.1.4. Turn on cold water tap and run for 4 to 5 minutes or until the water temperature has stabilized, whichever is longer. Then reduce flow so that stream of water is no greater than 1/8 inch in diameter.
      5.1.5. Remove container cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of container or bottle threads to be touched by any object.
      5.1.6. Do NOT rinse the bottle or remove any liquid or tablets in the bottom of the container. This may be the preservative.
      5.1.7. Fill container, ensuring that at least 100mL of sample are collected, and leaving airspace of approximately one inch.
      5.1.8. Carefully replace cap on container and tighten securely. Replace dust cover if applicable.

6. **Shipping and handling:**
   6.1. Complete chain-of-custody form if requested by lab or water supply program.
   6.2. Keep sample in closed chest.
   6.3. Samples should be kept between 0 and 10^{O} C (do not freeze).
   6.4. If using wet ice to maintain temperature, it is best to contain the ice in plastic zipper locking bags so as not to contaminate the sample with the melting ice.
   6.5. Deliver samples to lab the same day if possible.
   6.6. See the following table for applicable holding time.

Parameters	Holding Time
Total Coliforms, Fecal Coliforms, Escherichia coli, Enterococci	30 hours
Male-Specific and Somatic Coliphage	48 hours
SWTR Total Coliforms, Fecal Coliforms, HPC	8 hours
Heterotrophic Bacteria (HPC)	8 hours

Lead and Copper in Drinking Water in Residential Housing (Lead and Copper Rule)

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED.

Refer to State-Specific Instructions-: CT, ME, MA, NH, RI, VT

1. **Applicable Parameters:** Lead and Copper

2. **Sample Location: All lead and copper tap samples should be first draw samples.** The water in the plumbing system should have remained motionless for at least six hours before collecting the first-draw sample. Sample should be taken from a kitchen or bathroom sink cold water tap.

3. **Sampling Materials:**
   - 3.1 Containers: Acid-washed plastic or glass **1 liter bottles** with plastic or teflon cap liners.
   - 3.2 Preservative: 1 mL 1:1 nitric acid per liter.
   - 3.3 Other: Labels, marker.

4. **Safety Concerns:** None.

5. **General Sample Collection Procedure**:
   - 5.1 Prior arrangements will be made with the customer to coordinate the sample collection event. Dates will be set for sample kit delivery and pick-up by water department staff.
   - 5.2 There must be a minimum of six hours during which there is no water used from the tap the sample is taken from and any taps adjacent or close to that tap. The water department recommends that either early mornings or evenings upon returning home are the best sampling times to ensure that the necessary stagnant water conditions exist.
   - 5.3 A kitchen or bathroom cold water faucet is to be used for sampling. If water softeners or other treatment devices are used on kitchen taps, the sample should be collected from a bathroom tap that is not attached to a water softener or other treatment device if possible. **Aerators should not be removed prior to sampling.** The opened sampling container should be placed below the faucet and the cold water tap gently opened. The container should be filled to the line marked "1000 mL" or "one liter", and the water turned off.
   - 5.4 The sampling container should be tightly capped and placed in the sampling kit provided. The sample kit label should be reviewed at this time to ensure that all information on the label is correct.
   - 5.5 If any plumbing repairs or replacements have been done in this home since the previous sampling event, this information should be noted on the label in the space provided. In addition, if the sample was collected from a tap with a water softener or other treatment device, this should be noted as well.

6. Shipping and Handling:

6.1 If sample is to be picked up by the local water department personnel, pre-arrange same-day pick up. The sample kit should be placed outside the residence in the location agreed upon so that the water department staff may pick it up.

6.2 If homeowner is delivering the sample to the lab, deliver sample to the lab the same day.

6.3 States may provide the results of this monitoring effort to participating customers when reports are generated for the State. Some states provide notification within 10 working days from the time of sample collection when excessive lead and/or copper levels are found. Homeowners should check with their state to learn about the reporting policy in their State.

6.4 The following table lists the maximum holding time for the applicable parameters above.

Parameters	Holding Time
Lead & Copper	6 months (14 days is the maximum time allowed before adding the preservative. Must be acidified a minimum of 16 hours before analysis.)

SOP - COMMON ANIONS & INORGANIC DISINFECTION BY- PRODUCTS

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED. CONFIRM SCHEDULING AND INSTRUCTIONS WITH LAB BEFORE SAMPLING. WASH HANDS, WEAR SAFETY GLASSES, AND CLEAN NITRILE GLOVES.

(For State-Specific Instructions: CT, ME, MA, NH, RI, VT)

1. **Applicable Parameters:** Bromate, Chlorite, Chloride, Fluoride, Nitrate-N, Nitrite-N, Combined Nitrate-plus-Nitrite-N, ortho-Phosphate-P, Sulfate (See 40 CFR Part 141 for the most up to date list of approved methods.)

2. **Sample Location:** A state-approved location. If one has not been designated, select an appropriate location, which is representative of the distribution system. Avoid threaded faucets.

3. **Sampling Materials:**
   - 3.1. Container: Pre-cleaned 250 mL plastic or glass bottles (opaque for chlorite).
   - 3.2. Preservatives: The anion of interest that requires the most preservation treatment and the shortest holding time will determine the preservation treatment.
     - 3.2.1. Use sulfuric acid (H_2SO_4 to pH < 2) for combined analysis of Nitrate-plus-Nitrite.
     - 3.2.2. Use 0.1 mL of 5% EDA solution per 100 ml for bromate (not required for EPA Method 300.0) and chlorite. In general, cool samples to <6°C on ice.
   - 3.3. Other: Labels, marker, pH test strip paper, safety glasses, and clean disposable gloves.

4. **Safety Concerns**:
   - 4.1. Before collecting samples, all samplers must receive thorough training in proper handling of chemical preservatives and safety protocols so they are aware of the associated dangers and to determine appropriate safety precautions and first aid, should it be necessary.
   - 4.2. "Empty" containers for "nitrate-plus-nitrite" may contain sulfuric acid, which is a very strong acid that causes burns.
   - 4.3. Sample bottles that have preservatives in them should be labeled accordingly. The specific chemicals should be identified.

5. **General Sample Collection Procedure**:
   - 5.1. All Common Anions and Inorganic Disinfection By-Products
     - 5.1.1. Complete sample tag and sample collection form, using waterproof ink. Proper identification, including the date and time of collection must be submitted.
     - 5.1.2. Remove aerator, screen, and all attachments from the faucet.
     - 5.1.3. Turn on cold water tap and run for 4 to 5 minutes or until the water temperature has stabilized, whichever is longer. Then reduce flow so that stream of water is no greater than 1/8 inch in diameter.
     - 5.1.4. Remove container cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of container or bottle threads to be touched by any object.
     - 5.1.5. Follow specific instructions provided in sections 5.2, 5.3, or 5.4 to collect the parameters of interest.

5.2. **Bromide, Chloride, Fluoride, Nitrate-N, Nitrite-N, ortho-Phosphate-P, Sulfate**

5.2.1. No preservation is added.
5.2.2. Fill bottle to shoulder.
5.2.3. Screw cap on securely.

5.3. **Combined Nitrate-plus-Nitrite**

5.3.1. Fill bottle to shoulder.
5.3.2. Add 3 mL sulfuric acid to sample.
5.3.3. Screw cap on securely and shake sample.
5.3.4. Remove cap and pour a few drops of sample from bottle into it.
5.3.5. Pour a drop of sample from cap on a pH test strip. If a red color appears, the pH is ≤ 2 and screw cap on securely.
5.3.6. If a red color does not appear, repeat the steps of adding sulfuric acid, shaking and testing the sample by pouring it from the cap on a pH test strip until the pH ≤2.
5.3.7. Do not dip pH paper into sample.
5.3.8. Do not let pH paper touch the inside of the sample container or the cap.
5.3.9. Screw the cap on securely after the pH of the sample has been adjusted to pH ≤ 2.

5.4 **Bromate, Chlorate, Chlorite**

5.4.1 Fill bottle to shoulder, leaving room for preservatives and mixing. Do not rinse bottle if preservatives have been added to the bottle prior to collecting the sample.
5.4.2 Add 0.1 mL of 5% EDA solution per 100 mL sample.
5.4.3 If the sample is collected from a treatment plant employing chlorine dioxide, the sample must be sparged with an inert gas (helium, argon, nitrogen) prior to addition of the EDA preservative at time of sample collection.
5.4.4 Screw cap on securely.

6. **Shipping and Handling:**

6.1. Complete chain-of-custody form if requested by lab or water supply program.
6.2. Keep samples stored at temperatures above 0 ºC and less than 6 ºC.
6.3. Deliver samples to lab the same day if possible.
6.4. The following table lists the maximum holding time for the applicable parameters above.

Parameters	Holding Time
Bromate, Bromide, Chloride, Fluoride, Sulfate, Combined Nitrate-plus-Nitrite-N	28 days
Chlorite, Nitrate-N (chlorinated)	14 days
Nitrate-N (non-chlorinated), Nitrite-N, ortho-Phosphate-P	48 hours

SOP - METALS AND MINERALS

Do not use for "first draw" lead and copper sampling.

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED. CONFIRM SCHEDULING AND INSTRUCTIONS WITH LAB BEFORE SAMPLING. WASH HANDS, WEAR SAFETY GLASSES, AND CLEAN NITRILE GLOVES.

(For State-Specific Instructions: CT, ME, MA, NH, RI, VT)

1. **Applicable Parameters:** Metals and Minerals (See 40 CFR Part 141 for the most up to date list of approved methods.)

2. **Sample Location:** A state-approved location. If one has not been designated, select an appropriate location, which is representative of the distribution system. Avoid threaded faucets.

3. **Sampling Materials:**
   - 3.1. Containers: Pre-cleaned acid-washed plastic or glass 125 mL to 1-liter bottles with plastic or Teflon cap liners.
   - 3.2. Preservative: Approximately 3 mL 1:1 nitric acid per liter. Preservative may already be in bottle. Preservation may be done by lab after receipt of sample.
   - 3.3. Other: Labels, marker, pH test strip paper, safety glasses, and clean nitrile gloves.

4. **Safety Concerns:**
   - 4.1. Before collecting samples, all samplers must receive thorough training in proper handling of chemical preservatives and safety protocols so they are aware of the associated dangers and to determine appropriate safety precautions and first aid, should it be necessary.
   - 4.2. Nitric acid is a strong acid, and will cause burns.
   - 4.3. "Empty" sample containers may contain acid. Open them slowly and carefully.
   - 4.4. Sample bottles that have preservatives in them should be labeled accordingly. The specific chemicals should be identified.

5. **General Sample Collection Procedure**:
   - 5.1. All metals and minerals
     - 5.1.1. Complete sample tag and sample collection form, using waterproof ink. Proper identification, including the date and time of collection must be submitted.
     - 5.1.2. Remove aerator, screen, and all attachments from the faucet.
     - 5.1.3. Turn on cold water tap and run for 4 to 5 minutes or until water temperature has stabilized, whichever is longer. Then reduce flow so that stream of water is no greater than 1/8 inch in diameter. **Do not rinse bottle;** it may have a preservative in it.
     - 5.1.4. Remove container cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of bottle or bottle threads to be touched by any object.
     - 5.1.5. Fill bottle to the shoulder.
     - 5.1.6. If acid was added to container by bottle supplier, proceed to step 5.1.8.
     - 5.1.7. Add 3 mL 1:1 nitric acid to sample.

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5.1.8. Screw cap on securely and shake sample. Then remove cap. Pour a few drops of sample from bottle to cap, and then pour a drop of sample from cap on a pH test strip. If a red color appears, the pH is ☐2. If a red color does steps 5.1.7 and 5.1.8. Do not dip pH paper into sample. Do not let pH paper touch the inside of the sample container or the cap.

5.1.9. Screw cap on securely.

6. Shipping and Handling:

6.1. Complete chain-of-custody form if requested by lab or water supply program.

6.2. Keep samples in closed chest. Refrigeration is not required.

6.3. Deliver samples to lab the same day if possible.

Maximum Holding Time for Metals	
Analyte	**Holding Time**
Metals (except Mercury)	6 Months
Mercury	28 Days

SOP - INORGANIC CHEMICALS AND PHYSICAL TESTS

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED. CONFIRM SCHEDULING AND INSTRUCTIONS WITH LAB BEFORE SAMPLING. WASH HANDS, WEAR SAFETY GLASSES, AND CLEAN NITRILE GLOVES.

(For State-Specific Instructions: CT, ME, MA, NH, RI, VT)

1. **Applicable Parameters:** Alkalinity, Chlorine (total and free), Chlorine Dioxide, Color, Conductivity, Hardness, Odor, Oxygen (dissolved), pH, Total Dissolved Solids, Surfactants, Turbidity. (See 40 CFR Part 141 for the most up to date list of approved methods.)

2. **Sample Location:** A state-approved location. If one has not been designated, select an appropriate location, which is representative of the distribution system. Avoid threaded faucets.

3. **Sampling Materials:**
   - 3.1. Container: Pre-cleaned plastic or glass bottle as noted in the table in Chapter 3.
   - 3.2. Preservatives: Ice or refrigeration; For Hardness add approximately 3 mL 1:1 nitric acid or sulfuric acid.
   - 3.3. Other: Labels, marker, pH test strip paper, safety glasses, and clean nitrile gloves.

4. **Safety Concerns:**
   - 4.1. Before collecting samples, all samplers must receive thorough training in proper handling of chemical preservatives and safety protocols so they are aware of the associated dangers and to determine appropriate safety precautions and first aid, should it be necessary.
   - 4.2. "Empty" containers for "hardness" may contain nitric acid or sulfuric acid, which are very strong acid that causes burns.
   - 4.3. Sample bottles that have preservatives in them should be labeled accordingly. The specific chemicals should be identified.

5. **General Sample Collection Procedure:**
   - 5.1. All Inorganic chemistry and physical parameters.
     - 5.1.1. Complete sample tag and sample collection form, using waterproof ink. Proper identification, including the date and time of collection must be submitted.
     - 5.1.2. Remove aerator, screen, and all attachments from the faucet.
     - 5.1.3. Turn on cold water tap and run for 4 to 5 minutes or until the water temperature has stabilized, whichever is longer. Then reduce flow so that stream of water is no greater than 1/8 inch in diameter. Remove container cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of container or bottle threads to be touched by any object. **Do not rinse bottle**; it may have a preservative in it (See Hardness 5.2)
     - 5.1.4. Fill bottle to shoulder.
     - 5.1.5. Screw cap on securely

5.2 Hardness:

5.2.1 If acid was added to container by bottle supplier, proceed to step 5.2.3

5.2.2 Add 3 mL 1:1 nitric acid or sulfuric acid to sample.

5.2.3 Screw cap on securely and shake sample. Then remove cap. Pour a few drops of sample from bottle to cap, and then pour a drop of sample from cap on a pH test strip. If a red color appears, the pH is 2. If a red color does not appear, repeat steps 5.2.2 - 5.2.4. Do not dip pH paper into sample. Do not let pH paper touch the inside of the sample container or the cap.

5.2.4 Screw cap on securely.

6. Shipping and Handling:

6.1. Complete chain-of-custody form if requested by lab or water supply program.

6.2. Keep sample in closed chest.

6.3. Samples must be kept on ice between 0 and 6^{O} C (except for chlorine, chlorine dioxide, dissolved oxygen and pH.) Chlorine, chlorine dioxide, dissolved oxygen and pH samples may be kept on ice without harm to the samples.

6.4. Deliver sample to lab the same day if possible.

6.5. The following table lists the maximum holding time for the applicable parameters.

Parameter	Maximum Holding Time	Parameter	Maximum Holding Time
Alkalinity	14 days	Odor	24 hours
Chlorine (Total & Free)	Analyze within 15 minutes	Oxygen, Dissolved	Analyze within 15 minutes
Chlorine Dioxide	Analyze within 15 minutes	pH	Analyze within 15 minutes
Color	48 hours	Total Dissolved Solids	7 days
Conductivity	28 days	Surfactants	48 hours
Hardness	6 Months	Turbidity	48 hours

SOP - Cyanide

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED. CONFIRM SCHEDULING AND INSTRUCTIONS WITH LAB BEFORE SAMPLING. WASH HANDS, WEAR SAFETY GLASSES, AND CLEAN NITRILE GLOVES.

(For State-Specific Instructions: CT, ME, MA, NH, RI, VT)

1. **Applicable Parameters:** Cyanide (See 40 CFR Part 141 for the most up to date list of approved methods.)

2. **Sample Location:** A state-approved location. If one has not been designated, select an appropriate location that is representative of the distribution system. Avoid threaded faucets.

3. **Sampling Materials:**
   - 3.1. Container
     - 3.1.1. Pre-cleaned 1L plastic or brown glass bottle.
   - 3.2. Preservatives: Non-chlorinated samples may be collected in pre-preserved bottles. Chlorinated samples must be preserved in the field with ascorbic acid followed by the addition of sodium hydroxide.
     - 3.2.1. Chlorinated samples use ascorbic acid crystals followed by sodium hydroxide (NaOH to pH ≥12)
     - 3.2.2. Non-chlorinated samples use sodium hydroxide only
     - 3.2.3. Ice.
     - 3.2.4. (If sulfide is suspected, contact lab before sampling.)
   - 3.3. Other: Labels, marker, safety glasses, and phthalate-free gloves.

4. **Safety Concerns:**
   - 4.1. Before collecting samples, all samplers must receive thorough training in proper handling of chemical preservatives and safety protocols so they are aware of the associated dangers and to determine appropriate safety precautions and first aid, should it be necessary.
   - 4.2. Sample bottles that have preservatives in them should be labeled accordingly. The specific chemicals should be identified.
   - 4.3. Cyanide Caution! Sodium Hydroxide is a strong alkali and will cause burns. "Empty" sample containers may contain alkali. Open them slowly and carefully.

5. **General Sample Collection Procedure: Note: Chlorine and pH checked in Field**
   - 5.1. Complete sample tag and sample collection form, using waterproof ink. Proper identification, including the date and time of collection must be submitted.
     - 5.1.1. Remove aerator, screen, and all attachments from the faucet.
   - 5.2. Turn on cold water tap and run for 4 to 5 minutes or until the water temperature has stabilized, whichever is longer. Then reduce flow so that stream of water is no greater than 1/8 inch in diameter. **Do not rinse bottle.**
   - 5.3. Remove bottle cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of container or bottle threads to be touched by any object.

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5.4. Fill bottle to shoulder, leaving room for preservatives and mixing.

5.5. If you are certain that no chlorine is present, collect sample in pre-preserved bottle or add sodium hydroxide to pH ≥ 12 (see sections 5.8 – 5.9), Screw cap on securely, shake sample, and follow section 6, Shipping and Handling.
5.6. Check a small portion of the sample with field test kit to determine if chlorine is present. If chlorine is present, add 0.1 gram ascorbic acid.
5.7. Stir or shake sample until ascorbic acid is dissolved. Repeat step 5.6 and 5.7 if necessary to neutralize all chlorine.
5.8. After all chlorine has been neutralized, add enough sodium hydroxide (liquid or pellets one at a time to raise sample pH to 12 or greater.
5.9. Remove container cap and check sample pH by pouring a small amount of sample into the container cap, and then pouring a drop from the cap on a pH test strip. If the new color of the test strip does not indicate a pH of at least 12, repeat steps 5.8 and 5.9.
5.10. Screw cap on securely.

6. Shipping and Handling:

6.1. Complete chain-of-custody form if requested by lab or water supply program.
6.2. Keep samples stored at temperatures above 0 ºC and less than 6 ºC.
6.3. Deliver samples to lab the same day if possible.
6.4. The following table lists the maximum holding time for the applicable parameters.

Parameter	Holding Time
Cyanide	14 days

SOP - ASBESTOS

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED. CONFIRM SCHEDULING AND INSTRUCTIONS WITH LAB BEFORE SAMPLING. WASH HANDS, WEAR SAFETY GLASSES, AND CLEAN NITRILE GLOVES.

(For State-Specific Instructions: CT, ME, MA, NH, RI, VT)

1. **Applicable Parameters**: Asbestos in water (See 40 CFR Part 141 for the most up to date list of approved methods.)

2. **Sample Location:** A state-approved location. If one has not been designated, select an appropriate location, which is representative of the distribution system. Avoid threaded faucets.

3. **Sampling Materials:**
   3.1 Container:
      3.1.1 Two Pre-cleaned 1-liter polyethylene or glass bottles.
      3.2 Preservatives: Keep samples stored at temperatures above 0 °C and less than 6 °C
   3.3 Other: Labels, marker, pH test strip paper, safety glasses, and gloves.

4. **Safety Concerns**:
Before collecting samples, all samplers must receive thorough training in proper handling of chemical preservatives and safety protocols so they are aware of the associated dangers and to determine appropriate safety precautions and first aid, should it be necessary.
"Empty" containers for chemistry parameters may contain corrosive or caustic preservatives that cause burns.
Sample bottles that have preservatives in them should be labeled accordingly. The specific chemicals should be identified.

5. **Sample Collection Procedure:**
   5.1 Complete sample tag and sample collection form, using waterproof ink. Proper identification, including the project number and location, and date and time of collection must be submitted.
   5.2 Remove the aerator and screen from faucet.
   5.3 Turn on the cold water tap and run the water for 4 to 5 minutes or until the water temperature has stabilized, whichever is longer. Then reduce flow so that stream of water is no greater than 1/8 inch in diameter.
   5.4 Remove first bottle cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of container or bottle threads to be touched by any object.
   5.5 Fill both bottles to approximately to the shoulder.
   5.6 Replace container cap securely.

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6. Shipping and Handling:

6.1 Complete chain-of-custody form if requested by lab or water supply program.

6.2 Keep samples stored at temperatures above 0 ºC and less than 6 ºC to avoid excessive bacterial or algal growth.

6.3 Deliver samples to lab the same day if possible.

6.4 The following table lists the maximum holding time for the applicable parameters.

Parameter	Holding Time
Asbestos	48 hours

SOP - Specific Ultraviolet Absorbance (SUVA)

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED. CONFIRM SCHEDULING AND INSTRUCTIONS WITH LAB BEFORE SAMPLING. WASH HANDS

(For State-Specific Instructions: CT, ME, MA, NH, RI, VT)

1. Applicable Parameters: UV254 and Dissolved Organic Carbon (DOC) (See 40 CFR Part 141 for the most up to date list of approved methods.)

2. Sample Location: A state-approved location. The UV254 and DOC samples used to determine an SUVA value must be taken at the same time and at the same location. SUVA must be determined on water prior to the addition of disinfectants/oxidants.

3. Sample Containers: Four (4) 1 L amber glass bottles (two (2) for each analysis) with teflon lined septa. (Use screw caps with thick silicone rubber-backed TFE septa with open ring to produce a positive seal for DOC samples).

4. Sample preservation: Ice or refrigerate samples above 0 °C and less than 6 °C from time of collection to analysis, and protect samples from light. SUVA samples require no further preservation, however, your lab will need to filter the sample for analysis within 48 hours. DOC samples require no preservation at the time of collection; however, your lab must filter and preserve the samples with sulfuric acid or phosphoric acid to a pH <2 within 48 hours.

5. Sample Collection Procedure:

5.1 Remove aerator & screen.
5.2 Turn on cold water tap and allow system to flush until water temperature has stabilized (2-3 minutes). Reduce flow (to thickness of a pencil).
5.3 Remove cap and rinse bottle with sample. Do not put cap face down or in pocket. Do not allow inside of cap, inside of container or bottle threads to be touched by any object.
5.3 Fill the sample bottle, and replace the cap.
5.4 Immediately fill three more bottles with sample using the same procedure.

6. Shipping and Handling:

6.1 Complete chain-of-custody form if requested by lab or water supply program.
6.2 Keep samples stored at temperatures above 0 °C and less than 6 °C to avoid excessive bacterial or algal growth.
6.5 Deliver samples to lab the same day if possible.
6.6 The following table lists the maximum holding time for the applicable parameters.

SUVA Parameter	Holding Time
UV254	48 hours
DOC	48 hours

SOP - Total Organic Carbon (TOC)

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED. CONFIRM SCHEDULING AND INSTRUCTIONS WITH LAB BEFORE SAMPLING. WASH HANDS, WEAR SAFETY GLASSES, AND CLEAN NITRILE GLOVES.

(For State-Specific Instructions: CT, ME, MA, NH, RI, VT)

1. **Applicable Parameters:** Total Organic Carbon (TOC) and Dissolved Organic Carbon (DOC). (See 40 CFR Part 141 for the most up to date list of approved methods.)

2. **Sample Location:** A state-approved location. If one has not been designated, select an appropriate location, which is representative of the distribution system. Avoid threaded faucets.

3. **Sampling Materials:**
   - 3.1. Container: Two pre-cleaned 40 ml amber glass septum vials with Teflon septa for each sampling site
   - 3.2. Preservatives: 0.5 ml of 9N sulfuric acid added to bottles before shipment to the field; ice or refrigeration
   - 3.3. Other: Labels, marker, safety glasses, and phthalate-free gloves.

4. **Safety Concerns**: Caution! "Empty sample containers contain sulfuric acid which is a strong acid and will cause burns. Open them slowly and carefully.

5. **Sample Collection Procedure**:
   - 5.1. Remove aerator, screen, and all attachments, such as hoses, from the tap.
   - 5.2. Turn on cold water tap and run for 4 to 5 minutes or until the water temperature has stabilized, whichever is longer. Then reduce flow so that stream of water is no greater than 1/8 inch in diameter.
   - 5.3. Remove bottle cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of container or bottle threads to be touched by any object.
   - 5.4. Fill vial carefully until water is actually above the vial rim. (This will prevent the formation of an air pocket in the vial). Gently tap the vial to dislodge any air bubbles.
   - 5.5. Carefully hook cap over the top of the vial. The Teflon side of the septum must be facing the sample (Teflon side is smooth and shiny).
   - 5.6. Screw cap on securely. Check for air bubbles by inverting the vial and gently tapping the cap. If bubbles are present, add more water. (NOTE: Samples with bubbles cannot be analyzed)
   - 5.7. Shake sample for one minute.

5.8. Complete sample tag and sample collection form, using waterproof ink. Proper identification, including project number and location, and the date and time of collection, must be submitted.
5.9. Complete chain-of-custody form if requested by lab or water supply program.

6. **Shipping and Handling:**
6.1. Complete chain-of-custody form if requested by lab or water supply program.
6.2 Keep samples in closed chest at temperatures above 0°C and less than 6°C and away from direct light and solvent vapors.
6.3 Deliver the samples to lab the same day, if possible.
6.4 The following table lists the maximum holding time for the applicable parameters.

Parameter	Holding Time
TOC	28 Days

SOP - VOLATILE ORGANIC COMPOUNDS (VOCs) and TRIHALOMETHANES (THMs)

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED. CONFIRM SCHEDULING AND INSTRUCTIONS WITH LAB BEFORE SAMPLING. WASH HANDS, WEAR SAFETY GLASSES, AND CLEAN NITRILE GLOVES.

(For State-Specific Instructions: CT, ME, MA, NH, RI, VT)

1. **Applicable Parameters:** Volatile organic compounds, including Trihalomethanes (See 40 CFR Part 141 for the most up to date list of approved methods.)

2. **Sample Location:** A state-approved location. If one has not been designated, select an appropriate location that is representative of the distribution system. Avoid threaded faucets.

3. **Sampling Materials:**

3.1 Containers: Two pre-cleaned 40-mL glass vials with Teflon septa per sampling location. (if SIM mode analysis anticipated (524.3) – collect 2 extra field samples)

3.2 Preservatives: VOCs + THMs

3.2.1 – 524.2 – add 25 mg ascorbic acid, 1:1 hydrochloric acid to ensure a pH of about 2,
chill with ice or refrigeration; for VOCs gaseous at room temperature – add 3 mg sodium thiosulfate instead of ascorbic acid. Keep chilled with ice or refrigeration.

3.2.2 – 524.3 – for 40-mL vial, add 25 mg of ascorbic acid and 200 mg of maleic acid to ensure a pH of about 2; for other collection volumes used, adjust the amount of the preservation reagents so that the final concentrations of ascorbic and maleic acid in the sample containers are 0.625 g/L and 5 g/L, respectively. Keep chilled with ice or refrigeration.

3.3 Preservatives: THMs only – 3 mg sodium thiosulfate, keep chilled with ice or refrigeration.

3.4 Trip blanks: The laboratory must provide two trip blanks, to accompany collectors, on each compliance monitoring sampling event. Do not open trip blanks.

3.5 Other: Labels, marker, pH test strip paper, and DPD chlorine field test kit (if water has been chlorinated).

4. **Safety Concerns:** Caution! Hydrochloric acid is a strong acid, and will cause burns. Caution! "Empty" sample vials may contain acid. Open them slowly and carefully.

5. **Sample Collection Procedure:**

5.1 All samples – Fill two vials as follows

5.1.1 Complete sample tag and sample collection form, using waterproof ink Proper identification, including the date and time of collection must be submitted.

5.1.2 Remove aerator, screen, and all attachments from the faucet.

5.1.3 Turn on the cold water tap and run it for 4 to 5 minutes or until water temperature has stabilized, whichever is longer. Then reduce flow so that stream of water is no greater than 1/8 inch in diameter.

5.1.4 Remove container cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of bottle or bottle threads to be touched by any object.

5.1.5 Follow specific instructions provided in sections 5.2 or 5.3 to collect the parameters of interest.

5.2 Chlorinated Water Supplies

5.2.1 Use vials that have 25 mg of powdered ascorbic acid added to vial by the bottle supplier.

5.2.2 Fill vial carefully until water is above the vial rim. (This will prevent the formation of an air pocket in the vial). Gently tap the vial to dislodge any air bubbles.

SOP – VOCs and THMs
page 1 of 2

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5.2.3 Carefully add 2 drops of 1:1 hydrochloric acid to center of the water surface (i.e., to the meniscus). The acid will sink to bottom of vial, displacing 2 drops of sample.

5.2.4 Carefully hook cap over the top of the vial. The Teflon side of the septum must be down (facing the sample). (Teflon surface is shiny.)

5.2.5 Screw cap on securely. Check for air bubbles by inverting the vial and gently tapping the vial. If bubbles are present, remove the cap and repeat step 5.2.2. If any sample in the vial is spilled, resample with a fresh vial. (Note: Samples with bubbles cannot be analyzed.)

5.2.6 Shake sample for one minute.

5.3 Unchlorinated Water Supplies

5.3.1 Use vials that have 1:1 hydrochloric acid added to the vial by the bottle supplier.

5.3.2 Fill vial carefully until water is above the vial rim. (This will prevent the formation of an air pocket in the vial). Gently tap the vial to dislodge any air bubbles.

5.3.3 Carefully hook cap over the top of the vial. The Teflon side of the septum must be down (facing the sample). (Teflon surface is shiny.)

5.3.4 Screw cap on securely. Check for air bubbles by inverting the vial and gently tapping the vial. If bubbles are present, remove the cap and repeat step 5.3.2. If any sample in the vial is spilled, resample with a fresh vial. (Note: Samples with bubbles cannot be analyzed.)

5.3.5 Shake sample for one minute.

6. **Shipping and Handling:**

6.1 Complete chain-of-custody form if requested by lab or water supply program.

6.2 Keep samples in closed chest at temperatures above 0°C and less than 6°C and away from direct light and solvent vapors.

6.3 Deliver the samples to lab the same day, if possible.

6.4 The following table lists the maximum holding time for the applicable parameters.

Parameters	Holding Time
Volatile organic compounds, including trihalomethanes	14 days
Volatile organic compounds, including trihalomethanes (unpreserved)	24 hours

SOP - HALOACETIC ACIDS (HAA5)

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED. CONFIRM SCHEDULING AND INSTRUCTIONS WITH LAB BEFORE SAMPLING. WASH HANDS, WEAR SAFETY GLASSES, AND CLEAN NITRILE GLOVES.

(For State-Specific Instructions: CT, ME, MA, NH, RI, VT)

1. **Applicable Parameters:** Haloacetic acids (See 40 CFR Part 141 for the most up to date list of approved methods.)

2. **Sample Location:** A state-approved location. If one has not been designated, select an appropriate location that is representative of the distribution system. Avoid threaded faucets.

3. **Sampling Materials:**
   - 3.1. Containers:
     - 3.1.1. For 552.1, one pre-cleaned 250-mL amber glass bottle with Teflon-lined cap.
     - 3.1.2. For 552.2, two pre-cleaned 60-mL amber glass septum vials with Teflon septa.
   - 3.2. Preservatives: Granular ammonium chloride added to bottles before shipment to the field, ice.
   - 3.3. Other: Labels, marker, safety glasses, and phthalate-free gloves.

4. **Safety Concerns**:
   - 4.1. Caution! "Empty" sample bottles will contain special preservatives. (They should be labeled accordingly.) Open them slowly and carefully.
   - 4.2. Before collecting samples, all samplers must receive thorough training in proper handling of chemical preservatives and safety protocols so they are aware of the associated dangers and to determine appropriate safety precautions and first aid, should it be necessary.

5. **Sample Collection Procedure:**
   - 5.1. Complete sample tag and sample collection form, using waterproof ink. Proper identification, including the date and time of collection must be submitted.
   - 5.2. Remove aerator, screen, and all attachments from the faucet.
   - 5.3. Turn on cold water tap and run for 4 to 5 minutes or until water temperature has stabilized, whichever is longer. Then reduce flow so that stream of water is no greater than 1/8 inch in diameter.
   - 5.4. Remove container cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of bottle or bottle threads to be touched by any object.
   - 5.5. Fill each bottle or vial carefully until water is actually above the rim. (This will prevent the formation of an air pocket inside the container.) Gently tap the container to dislodge any air bubbles.

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5.6. For vials, carefully hook cap over the top of the vial. The Teflon side of the septum must be facing the sample. (Teflon side is smooth and shiny).
5.7. Screw cap on securely. Check for air bubbles by inverting the container and gently tapping the cap. If bubbles are present, add more water. (Note: Samples with bubbles cannot be analyzed.)
5.8. Shake sample for one minute.

6. Shipping and Handling:

6.1. Complete chain-of-custody form if requested by lab or water supply program.
6.2. Keep samples in closed chest at above 0°C and less than 6°C. Keep them away from direct light and solvent vapors.
6.3. Deliver samples to lab the same day if possible.
6.4. The following table lists the maximum holding time for the applicable parameters.

Parameters	Holding Times
Haloacetic Acids Monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, dibromoacetic acid	28 days for 552.1 14 days for 552.2

SOP - SYNTHETIC ORGANIC CHEMICALS (SOCs)

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED. CONFIRM SCHEDULING AND INSTRUCTIONS WITH LAB BEFORE SAMPLING. WASH HANDS, WEAR SAFETY GLASSES, AND CLEAN NITRILE GLOVES.

(For State-Specific Instructions: CT, ME, MA, NH, RI, VT)

1. **Applicable Parameters:** Ethylene dibromide, dibromochloropropane, semi-volatile organic compounds, pesticides, carbamates, glyphosate, herbicides (chlorinated acids) Other - Alachlor, Atrazine, Dioxin, Diquat, Endothall (See 40 CFR Part 141 for the most up to date list of approved methods.)

2. **Sample Location**: A state-approved location. If one has not been designated, select an appropriate location, which is representative of the distribution system.

3. **Sampling Materials:**
   - 3.1. **Containers:** A total of 9 containers including: 3 pre-cleaned one-liter amber glass bottles with Teflon-lined caps and 6 pre-cleaned 40mL vials with Teflon-lined caps for each sampling site.
   - 3.2. **Preservatives:** Keep samples stored at temperatures above 0 ºC and less than 6 ºC; granular sodium thiosulfate, sodium sulfite, and/or potassium tartrate or potassium dihydrogen citrate; hydrochloric acid added to appropriate bottles.
   - 3.3. **For specific preservatives, refer to Chapter 3, page 14 of this Manual.**
   - 3.4. **Other**: pH test strip paper, markers, labels, and field reagent blanks.

4. **Safety Concerns**: Caution! "Empty" sample bottles contain special preservatives. Open them slowly and carefully. Caution! Hydrochloric acid is a strong acid and can cause burns.

5. **General Sample collection procedure:** Refer to the sample container matrix **(Chapter 3)** for this method to correctly associate bottles and preservatives for either a chlorinated or a non-chlorinated system.
   - 5.1 Turn on cold water tap and run water for 4 to 5 minutes or until water temperature has stabilized, whichever is longer. Then reduce flow so that stream of water is no greater than 1/8 inch in diameter.
   - 5.2 For each one liter bottle labeled Pest-525: Remove container cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of bottle or bottle threads to be touched by any object. **Do not rinse bottle.** Fill bottle to shoulder. If chlorine is not present in the system, proceed to step 5.4.
   - 5.3 If chlorine is present in the system, collect sample in the container that has sodium sulfite added to the bottle then carefully add 2mLs of the 6N hydrochloric acid provided and check that the pH is 1-2.
   - 5.4 Screw cap on securely.
   - 5.5 Complete sample tag.

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5.6 For each of the 40mL vials: Remove container cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of vial or bottle threads to be touched by any object. Do not rinse vial. Fill vial carefully to just overflowing, but do not flush out the preservative. If chlorine is not present in the system, proceed to step 5.7. If chlorine is present in the system, check to make sure the container is pre-preserved with the correct preservative or add the preservative as specified in the Sample Container and Preservation Table of this manual.

5.7 Screw cap on securely. Check for air bubbles by inverting the vial and gently tapping the cap. If bubbles are present, add additional sample.

5.8 Field blanks- are treated same as sample.

5.9 Complete sample tag and sample collection form, using waterproof ink. Proper identification, including project number and location, and the date and time of collection, must be submitted.

6.0 Shipping and Handling:

6.1 Keep samples in closed chest at 0 ºC and less than 6 ºC away from direct light and solvent vapors.

6.2 Ice is not a packing material. To prevent breakage, wrap glass bottles in bubble wrap or other protective material.

6.3 If possible, deliver sample to lab the same day.

6.4 The following table lists the maximum holding time for the applicable parameters.

Synthetic Organic Chemical Parameters	Holding time
EDB / DBCP, Semi-Volatile Organics, Pesticides, Carbamates, Glyphosate, Herbicides (Chlorinated Acids) Other - Alachlor, Atrazine, Dioxin, Diquat, Endothall	14 Days

SOP - RADIONUCLIDES
(Except for Radon)

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES OF ALL INSTRUCTIONS ARE NOT FOLLOWED. CONFIRM SCHEDULING AND INSTRUCTIONS BEFORE SAMPLING. WASH HANDS. WEAR SAFETY GLASSES, AND CLEAN NITRILE GLOVES.

(For State-Specific Instructions: CT, ME, MA, NH, RI, VT)

1. **Applicable Parameters:** Gross alpha, gross beta, iodine, radium 226, radium 228, strontium, gamma emitters, tritium and uranium, cesium, iodine (See 40 CFR Part 141 for the most up to date list of approved methods.)

2. **Sample Location:** A state-approved location. If one has not been designated, select an appropriate location that is representative of the distribution system. Avoid threaded faucets.

3. **Sampling Materials:**
   - 3.1 Containers: One pre-cleaned one-1/2-gallon plastic bottle or two pre-cleaned 2-liter plastic bottles.
   - 3.2 Preservatives: None.
   - 3.3 Other: Labels, marker, safety glasses, and phthalate-free gloves.

4. **Safety Concerns:** None.

5. **Sample Collection Procedure:**
   - 5.1 Complete sample tag and sample collection form, using waterproof ink. Proper identification, including the date and time of collection must be submitted.
   - 5.2 Remove aerator, screen, and all attachments from the faucet.
   - 5.3 Turn on cold water tap and run for 4 to 5 minutes or until water temperature has stabilized, whichever is longer. Then reduce flow so that stream of water is no greater than 1/8 inch in diameter.
   - 5.4 Remove container cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of bottle or bottle threads to be touched by any object.
   - 5.5 Fill bottle to the shoulder.
   - 5.6 Screw cap on securely.

6. **Shipping and Handling:**
   - 6.1 Complete chain-of-custody form if requested by lab or water supply program.
   - 6.2 Deliver sample to lab the same day, if possible. Samples must be received at the lab within 5 days.
   - 6.3 The following table lists the maximum holding time for the applicable parameters.

Parameters	Holding time
Gross Alpha Activity; Gross Beta Activity; Iodine-131; Radium 226 & 228; Strontium 89 & 90; Tritium; Uranium; and Gamma Emitters (Barium-133, Cesium-134 & 137, Cobalt-60, and Zinc-65)	6 months

SOP - RADON

READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED! CONFIRM SCHEDULING AND INSTRUCTIONS WITH LAB BEFORE SAMPLING. WASH HANDS. WEAR SAFETY GLASSES, AND CLEAN NITRILE GLOVES.

(For State-Specific Instructions: CT, ME, MA, NH, RI, VT)
For **Connecticut**, the SOP is : CTRadon in the State Specific Instructions

1. **Applicable Parameters:** Radon (See 40 CFR Part 141 for the most up to date list of approved methods.)

2. **Sample Location:** A state-approved location. If one has not been designated, select an appropriate location, which is representative of the distribution system. Avoid threaded faucets.

3. **Sampling Materials:**
   - 3.1 Containers: Two or more pre-cleaned 40-mL glass septum vials with Teflon-lined septum.
   - 3.2 Preservative: Closed, insulated chest without ice.
   - 3.3 Other: Labels, marker, safety glasses, and phthalate-free gloves.

4. **Safety Concerns:** None.

5. **Sample Collection Procedure:**
   - 5.1 Complete sample tag and sample collection form, using waterproof ink. Proper identification, including the date and time of collection must be submitted.
   - 5.2 Remove aerator, screen, and all attachments from the faucet.
   - 5.3 Turn on cold water tap and run for 4 to 5 minutes or until water temperature has stabilized, whichever is longer. Then reduce flow so that stream of water is no greater than 1/8 inch in diameter.
   - 5.4 Remove container cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of bottle or bottle threads to be touched by any object.
   - 5.5 Fill vial carefully until water is actually above the vial rim. (This will prevent the formation of an air pocket in the vial.) Gently tap the vial to dislodge any air bubbles.)
   - 5.6 Carefully hook cap over the top of the vial, trying to match the threads. The Teflon side of the septum must be facing the sample. (Teflon side is smooth and shiny).
   - 5.7 Screw cap on securely. Check for air bubbles by inverting the vial and gently tapping the cap. If bubbles are present, empty the vial and repeat sampling procedure, beginning with step 5.5. (Note: Samples with bubbles cannot be analyzed.)
   - 5.8 Repeat steps 5.4 through 5.7 for each subsequent vial. At least two vials must be collected at each location.

6. **Shipping and Handling:**
   - 6.1 Complete chain-of-custody form if requested by lab or water supply program.
   - 6.2 Keep samples in closed chest at room temperature and away from direct light and solvent vapors.
   - 6.3 Deliver sample to lab the same day.
   - 6.4 The following table lists the maximum holding time for the applicable parameters.

Parameter	Holding Time
Radon	4 days

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2nd Quarter FY 2013 GPRA Results

RI

	GPRA-sys	GPRA-pop
'13 National Target	90%	92%
'13 Actual Region I	86.4%	93.9%
'13 RI	89.9%	90.2%

GPRA-sys is the percent of community water systems that meet all applicable health based standards through approaches that include effective treatment and source water protection.

GPRA-pop is the percent of population served by CWSs that will receive drinking water that meets all applicable health based drinking water standards through approaches incl. effective treatment & source water protection.

These statistics are calculated each quarter using the most recent 4 quarters of health-based compliance information in SDWISFED for community systems.

2nd Quarter FY 2013 GPRA Results

RI

	% Person Months
'13 Target National	95.0%
'13 Actual National	96.3%
'13 Actual Region 1	98.2%
'13 Actual RI	97.5%

Measure: *Percent of person months (i.e., all persons served times 12 months) during which community water systems provide drinking water that meets all applicable health-based standards*

Explanation: This measure tracks the duration of a population's exposure to violations. For example, some systems may receive a violation for an incident that lasts one day (e.g., turbidity increase due to storm event) as opposed to a longer term event.

These statistics are calculated each quarter using the most recent 4 quarters of health-based compliance information in SDWISFED for community systems.

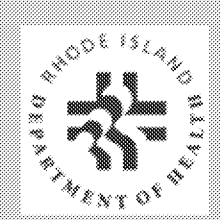
2nd Quarter FY 2013 GPRA Results

Top Ten (actually 9)

Largest CWSs with Reported Health-Based Violations in 13q2.

PWS ID	PWS Name	Status	P Source	Ret Pop Srvd	C Code	C Type	C Name	V Code	V Type	V Name
RI1592010	NEWPORT-CITY OF	Active	SW	43809	2950	St1_DBP	TTHM	2	MCL	MCL, Average
RI1559512	WESTERLY WATER DEPARTMENT	Active	GW	38000	3100	TCR	Coliform (TCR)	22	MCL	MCL, Monthly (TCR)
RI1000016	NAVAL STATION, NEWPORT	Active	SWP	7871	2950	St1_DBP	TTHM	2	MCL	MCL, Average
RI1615623	SOUTH KINGSTOWN-SOUTH SHORE	Active	GW	3811	3100	TCR	Coliform (TCR)	22	MCL	MCL, Monthly (TCR)
RI1592020	PASCOAG UTILITY DISTRICT, WATER DIVISION	Active	GW	3500	3100	TCR	Coliform (TCR)	22	MCL	MCL, Monthly (TCR)
RI1592023	PRUDENCE ISLAND WATER DISTRICT	Active	GW	1000	5000	LCR	Lead & Copper Rule	65	TT	Public Education
RI1647512	CENTRAL BEACH FIRE DISTRICT	Active	GW	470	5000	LCR	Lead & Copper Rule	59	TT	WQP Entry Point Non-Compliance
RI1559513	SHADY HARBOR FIRE DISTRICT	Active	GW	162	3100	TCR	Coliform (TCR)	22	MCL	MCL, Monthly (TCR)
RI1900053	CANONCHET CLIFFS WATER ASSOCIATION INC.	Active	GW	154	3100	TCR	Coliform (TCR)	21	MCL	MCL, Acute (TCR)

2012



RHODE ISLAND DEPARTMENT OF HEALTH

Office of Drinking Water Quality

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INTRODUCTION

The Safe Drinking Water Act (SDWA) includes a requirement that EPA establish and enforce standards (MCLs, treatment techniques, monitoring) that public drinking water systems must adhere to. States and Indian Tribes are given primary enforcement responsibility (e.g. primacy) for public water systems in their State if they meet certain requirements. EPA recently released revisions to the primacy requirements. In order to maintain primacy states must:

- Have regulations for contaminants regulated by the national primary drinking water regulations that are no less stringent than the regulations promulgated by EPA.
- Have adopted and be implementing procedures for the enforcement of State regulations.
- Maintain an inventory of public water systems in the State.
- Have a program to conduct sanitary surveys of the systems in the State.
- Have a program to certify laboratories that will analyze water samples required by the regulations.
- Have a laboratory that will serve as the State's "principal" lab, that is certified by EPA.
- Have a program to ensure that new, or modified, systems will be capable of complying with State primary drinking water regulations.
- Have adequate enforcement authority to compel water systems to comply with NPDWRs.
- Have adequate recordkeeping and reporting requirements.
- Have adequate variance and exemption requirements as stringent as EPA's, if the State chooses to allow variances or exemptions.
- Have an adequate plan to provide for safe drinking water in emergencies like a natural disaster.
- Have adopted authority to assess administrative penalties for violations of their approved primacy program.
- Adhere to any revisions to the primacy requirements.

Copies of this document are also available upon request in braille, large print, audiocassette, and as an electronic file on a computer disk. Contact the Rhode Island Department of Health, Office of Drinking Water Quality, Three Capitol Hill, Providence, RI 02908. Phone number: 401-222-6867, or Relay RI (TDD) at 711.

FROM OUR CHIEF

Drinking water utilities in Rhode Island face numerous challenges such as drought, pollution, competing water uses, and aging infrastructure. Additional impacts from global climate change will exacerbate current challenges and present new risks to the water utilities and the consumers they serve. These issues must be addressed to ensure the continued safety, affordability and dependability of our water sources into the future.

In January 2012 this office launched *Safe* **Water** RI: *Ensuring Safe Water for Rhode Island's Future* to assess changing environmental conditions and their potential impacts on drinking water utilities in the state. In 2013 the *Safe* **Water** RI project will expand to look at public perceptions of public tap water by launching a campaign to promote the public health benefits of tap water consumption and to support the renewal of water infrastructure.

HIGHLIGHTS

HIGHLIGHTS

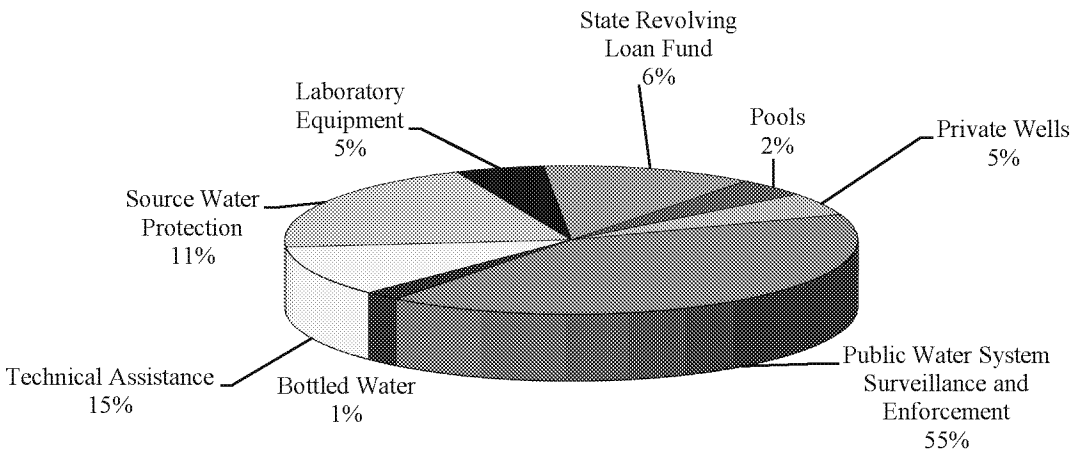
FINANCIALS

Program Budget

The budget for this office during this period:

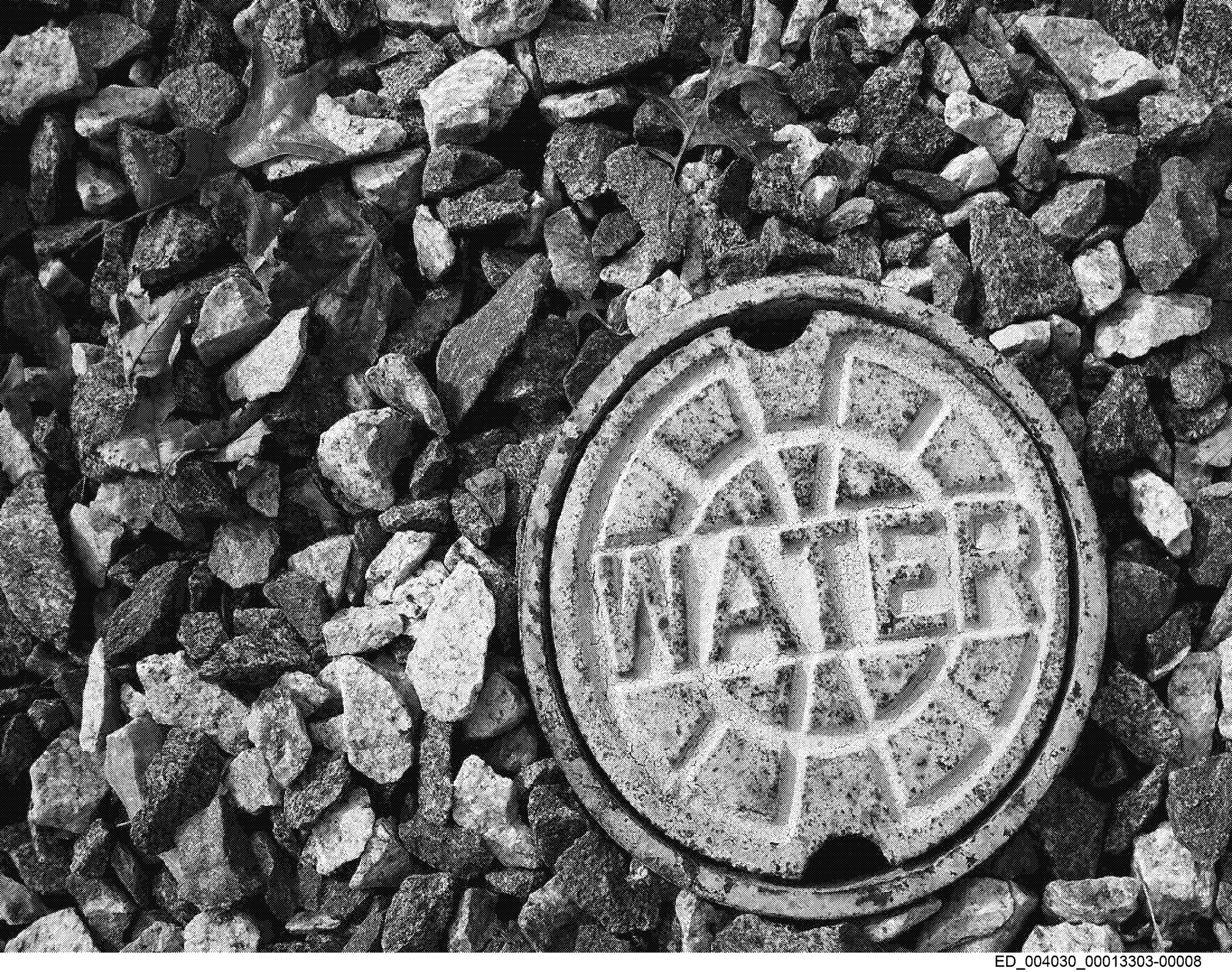
Federal Funding	$ 2,353,000
State Funding	350,000
Restricted Receipt	63,000
Total Budget	$2,766,000

Programs / Initiatives Supported by Funds



CHAPTER 1

IMPACT AND OVERSIGHT



The mission of the Public Drinking Water Program is to protect and promote the health and safety of the people of Rhode Island by ensuring the quality of the state's public drinking water supplies for use by Rhode Island residences, businesses, hospitals, nursing homes, schools, restaurants, industry, and fire and emergency response. The Office of Drinking Water Quality works hard to maintain an excellent record of meeting this high priority public health responsibility.

PUBLIC DRINKING WATER

HEALTH's Role

- Enforce federal and state drinking water regulations
- License and regulate public water systems
- Certify drinking water operators
- Inspect public water systems
- Sample and monitor water quality
- Training
- Administer the Drinking Water State Revolving Loan Fund
- Plan for emergencies, security, and counterterrorism
- Source water assessment
- Engineering reviews
- Capacity development

Persons served by public water in Rhode Island	*1,091,537
Persons served by surface water systems	*868,804
Persons served by groundwater systems	*222,733
Public water systems	485
Community systems	88
Non-transient systems	76
Transient systems	321
Systems using surface water	30
Systems using groundwater	**455

*Includes all populations, transient, residential, and workplace.

**Some water systems use both ground and surface water (purchased and non-purchased).

Public water systems in Rhode Island range in size from large city systems that serve nearly 300,000 residents to small, rural, non-community transient systems, such as restaurants or convenience stores that utilize wells as their drinking water source.

3 TYPES OF PUBLIC WATER SYSTEMS

A **public water system** provides piped water to the public for human consumption. A public system has at least 15 service connections or regularly serves an average of 25 individuals daily for at least 60 days out of the year.

Community *water systems serve at least 25 year-round residents, or have at least 15 service connections used by year-round residents.*

Non-transient non-community *water systems serve at least 25 of THE SAME people, for at least six months of the year. Schools and factories are examples.*

Transient non-community *water systems serve at least 25 DIFFERENT people for at least 60 days of the year. Restaurants, hotels and campgrounds are transient water suppliers.*

The Private Well Program is the only source of public health information for more than 100,000 citizens and tourists who rely on private water systems for their drinking water. This program is critical to assuring safe and potable water supplies through the education of private well owners, state and local officials, and other involved parties on the proper construction, maintenance, operation, and testing of their wells.

PRIVATE DRINKING WATER

Within HEALTH, the Office of Private Well Water Contamination provides tools, training and assistance for building officials and routine maintenance and water testing guidance for the well-owning public.

HEALTH has partnered with the Rhode Island Department of Environmental Management and the University of Rhode Island Cooperative Extension Water Quality Program since 1993 to develop and maintain the URI Home*A*Syst Private Well Testing and Protection webpages. See: http://www.uri.edu/ce/wq/has/Private%20Wells/PRIVATE.HTM.

2012 Program Highlights

Implemented the on-line Private Well Information Viewer providing municipal officials and non-water quality professionals with accurate information on required well water testing

Delivered drinking water well protection workshops to help communities safeguard their drinking water through understanding patterns of ground water movement into private wells, the interaction of surface water and ground water, and general contaminant pathways.

Provided technical support and assistance to private well owners in person, by phone and via email

Developed a database of more than 300 private well owners for delivery of protection tips, testing reminders, workshop schedules; and, other information in an email newsletter format.

Assures public health and safety of public pools and spas through licensing, design approval, inspection, sampling, and complaint response.

PUBLIC POOLS AND SPAS

HEALTH ensures that public swimming pools are constructed and operated in a safe and sanitary manner. Inspections of the filtering system, water quality, and other sanitary and safety concerns are performed routinely.

In 2012 HEALTH licensed 418 public pools. Yearly (indoor) pools are licensed to operate from January 1 through December 31 of the year issued. Seasonal (outdoor) pools are licensed from June 1 through September 30 of the year issued. Health collected and analyzed approximately 262 samples for bacteria, free residual chlorine, and pH.

Licensed Public Pools 2012

Swimming Pools		Therapy Pools (Hot Tubs)	
Yearly	Seasonal	Yearly	Seasonal
123	218	64	13

Total licensed public pools 418

This program assures public health and safety of bottled drinking water through licensing, design approvals inspections, and complaint response. Risks to the general public caused by bottled water can include contracting waterborne illness due to poor source water quality, treatment, or bottling processes. HEALTH oversight greatly reduces these risks.

BOTTLED WATER

HEALTH's Role

- Licensure of both in and out of state operations
- Inspections
- Water quality data review
- Source approval for in-state operations
- Response to water quality/health issues

Bottled water is an increasingly popular beverage. More than 8.5 billion gallons are sold annually in the United States. The U.S. Food and Drug Administration (FDA) regulate bottled water as a food product. Under the Federal Food, Drug, and Cosmetic Act (FFDCA), manufacturers are responsible for producing safe, wholesome and truthfully labeled food products, including bottled water products. The FDA has established specific regulations for bottled water including standard of identity regulations that define bottled water as "water that is intended for human consumption and that is sealed in bottles or other containers with no added ingredients except that it may optionally contain safe and suitable antimicrobial agents".

Bottled water may come from several sources: artesian well water, public water systems, mineral water, purified water, sparkling water, or spring water. Prerequisites for obtaining a bottling permit are: submittal and approval of analytical data for the water source and product, label approval, satisfactory inspection reports, and approval of the permit application.

CHAPTER 2

OUTREACH AND COLLABORATION

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CAPACITY DEVELOPMENT

The 1996 amendments to the Safe Drinking Water Act (SDWA) include provisions for capacity development. The EPA, states, and public water systems work together to ensure that public water systems attain and maintain the technical, managerial, and financial capacities that contribute to the viability of sustainable water utilities.

DEVELOPING CAPACITY

Rhode Island's public drinking water systems face a wide array of challenges in meeting the public health protection standards aimed at ensuring safe drinking water.

The overall purpose of the state's capacity development strategy is to identify methods for assisting water utilities achieve sustainable operations over time.

HEALTH maintains various contracts with industry professionals and organizations to provide wide-ranging services to the owners and operators of public water systems.

Capacity development staff develop these contracts based on three underlying objectives:

1. Understanding the challenges and opportunities facing water utilities as they move toward more sustainable operations.
2. Identifying water utility best practices to promote managerial capabilities that lead to sustainability.
3. Seeking out collaborative opportunities that help to uncover gaps in tools and assistance efforts.

2012 PROGRAM HIGHLIGHTS

- Partner with the State Revolving Loan Fund program to promote collaboration among infrastructure funding organizations
- Development of the SafeWater RI initiative. Reports available at http://www.health.ri.gov/programs/drinkingwaterquality/
- Kick-of Small Water System Engineering Assistance and Contracted Serves Guidance projects.

OPERATOR CERTIFICATION

Ensuring a competent workforce is a key element in the protection of public health and the provision of safe drinking water. Individuals who operate public water supply treatment and distribution systems must be certified and licensed by HEALTH. Once licensed, operators adhere to continuing education and experience requirements prior to license renewal or upgrade. There are 603 licensed and certified treatment and distribution operators in the state.

CERTIFICATION & TRAINING

There are 161 Rhode Island public water systems that are required to comply with the state's operator certification regulations. A Board of seven persons, comprised of the Director of HEALTH, (or his designee) and six members appointed by the Governor oversee the program. The Board meets quarterly and is responsible for review and/or updates to the regulations [R23-65-DWQ]; reviewing and approving applications for certification exams and license renewal; and disciplinary actions against licensees as necessary.

In collaboration with the Capacity Development, Drinking Water State Revolving Loan Fund, and Emergency Planning programs, the Operator Certification program offered operators a variety of training and professional development opportunities in 2012. Together we offered:

- Individual and group training and operator certification assistance for the state's 603 certified operators,
- A training course voucher program through New England Water Works Association,
- Incident Command System training and certification,
- National Incident Management System training, and
- Training and technical assistance through Texas A&M Engineering Extension Service.

EMERGENCY PLANNING AND SECURITY

A secure water sector is critical to protecting public health and ensuring public confidence. Through this office, HEALTH's Water System Security and Emergency Preparedness Program is responsible for helping drinking water systems develop plans to better respond to potential disasters or emergencies.

SAFETY & SECURITY

Public water and power sectors are interdependent and share many of the same vulnerabilities, such as natural and manmade disasters, pandemics, and terrorism. During severe storms or other events resulting in a loss of power, water systems may need to rely on auxiliary power units to maintain critical operations for several days or weeks.

HEALTH is currently partnering with the University of Rhode Island Cooperative Extension to develop small water system emergency preparedness and response guidance and trainings.

The project goal is to assist small drinking water systems by providing professional training and tools for the development and implementation of vulnerability assessments, emergency preparedness plans and communication and public notification strategies.

Also during 2012, HEALTH contracted with Horsley Witten Group, Inc. to update this office's Emergency Operation Plan and develop, organize and implement associated tabletop training exercises for DWQ staff and public water systems.

DRINKING WATER STATE REVOLVING LOAN FUND

The Safe Drinking Water Act Amendments of 1996 authorized the creation of a Drinking Water State Revolving Loan Fund (DWSRF) program to help public water systems finance the costs of infrastructure needed to achieve and/or maintain compliance with SDWA requirements and to meet the public health objectives of the act.

IMPROVING SUSTAINABILITY

Our office, in conjunction with the Rhode Island Clean Water Finance Agency (RICWFA), operates the DWSRF program with funds awarded through an annual EPA capitalization grant. Among the many program functions, staff is responsible for compilation of an infrastructure project priority list; environmental review of proposed projects; oversight of construction; and loan payment review, disadvantaged business enterprise oversight, RI prevailing wage and Davis-Bacon requirement oversight and review and approval of contractor payment requests. Capacity development and operator certification are key loan program qualification components and are reviewed during the application process.

During the state fiscal year 2012, (July 1, 2011 – June 30, 2012) the DWSRF and RICWFA approved and closed 5 loans totaling $57,855,000 under the DWSRF base program.

The FY12 Program Evaluation Report completed by the EPA determined that the State is in compliance with program requirements and has made a total of 47 loan agreements for drinking water infrastructure projects as of June 30, 2012. The loans, which totaled 287,045,811, far exceeded the required binding commitments of $56,068,600.

CHAPTER 3

PROTECTING WATER QUALITY

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WATER QUALITY MONITORING & TREATMENT

There are many sources for water pollution. Contamination of drinking water can occur at multiple points, including in the water source, through inadequate water treatment processes, in storage tanks, and in distribution systems (the pipes that carry water to homes, businesses, schools, and other buildings). Treating water to remove or kill disease-causing contaminants is critical to the protection of public health.

Maximum Contaminant Levels

Under the Safe Drinking Water Act (SDWA), EPA sets maximum legal limits on the levels of certain contaminants in drinking water (MCL). The legal limits reflect both the level that protects human health and the level that water systems can achieve using the best available technology.

EPA rules also set treatment requirements, water-testing schedules and methods that water systems must follow.

HEALTH is the agency responsible for ensuring that the water systems in Rhode Island comply with these rules. Compliance Data for 2012 is included in Appendix-II (page 36).

Chemical Contaminant Rules

Chemical Contaminants were regulated in phases, which are collectively referred to as the Chemical Phase Rules. HEALTH regulates more than 90 contaminants in three contaminant groups: Inorganic Contaminants (IOCs), Volatile Organic Contaminants (VOCs), and Synthetic Organic Contaminants (SOCs). A list of contaminants and their maximum contaminant levels (MCLs), is maintained on line at http://water.epa.gov/drink/contaminants/index.cfm . The rules apply to all public water systems (PWS). PWS type, size, and water source determine which contaminants require monitoring for that system.

Radionuclides

Most drinking water sources have very low levels of radioactive contaminants ("radionuclides"), most of which are naturally occurring, although contamination of drinking water sources from human-made nuclear materials can also occur.

WATER QUALITY MONITORING & TREATMENT

Arsenic

Arsenic is a toxic chemical element that is unevenly distributed in the Earth's crust in soil, rocks, and minerals. It enters drinking water supplies from natural deposits in the Earth of from agricultural and industrial practices.

Total Coliform

There are a variety of bacteria, parasites, and viruses which can cause health problems when humans ingest them in drinking water. Testing water for each of these germs would be difficult and expensive. Instead, water quality and public health workers measure for the presence of bacteria in drinking water using coliform bacteria as an indicator. The presence of any coliforms in drinking water suggests that there may be disease-causing agents in the water.

Disinfectants and Disinfection Byproducts (DBPs)

In many cases, source water from a lake, river, reservoir or ground water aquifer needs to be disinfected to inactivate (or kill) microbial pathogens. A major challenge for water suppliers is how to balance the risks from microbial pathogens and disinfection byproducts. In 2012 there were 48 water systems regulated by this rule. This includes 20 systems that purchase and distribute water that has been treated with a disinfectant.

TREATMENT RULES

Ground Water Rule

The purpose of the rule is to reduce disease incidence associated with disease-causing microorganisms in drinking water. The rule establishes a risk-based approach to target ground water systems that are vulnerable to fecal contamination. Ground water systems that are identified as being at risk of fecal contamination must take corrective action to reduce potential illness from exposure to microbial pathogens. The rule applies to all systems that use ground water as a source of drinking water.

WATER QUALITY SAMPLING AND TESTING

Surface Water Treatment Rules (SWTR)

These rules establish filtration and disinfection treatment requirements for the control of pathogens for all public water supplies that utilize surface water sources or ground water sources that are under the influence of surface water. In Rhode Island there are 9 water systems that are covered by these rules. All of these water systems provide filtration and disinfection as part of their treatment processes. The SWTR requires an additional 22 systems that are secondary sellers of surface water to maintain a chlorine residual throughout their distribution system.

Lead & Copper Rule

The Lead and Copper Rule is intended to minimize the corrosivity of water provided by community and non-transient non-community water systems. Lead and copper enter drinking water primarily through plumbing materials. The treatment technique requires systems to monitor drinking water at customer taps. Excessively corrosive water triggers a requirement for treatment, public education, and if applicable, lead service line replacement.

Seven water systems are currently exceeding either the lead or copper action level, down from thirteen in 2011. Of those seven, only two are community systems, while five non-transient systems are still having difficulty. Two systems that had been exceeding the Lead Action Level (Jamestown Water Department and the Coventry National Guard Station) have either installed or adjusted treatment to solve the problem. Two others have installed treatment and are continuing to monitor its effectiveness. Two systems with recent exceedances are collecting data to propose appropriate treatment

Providence Water has been exceeding the lead action level since 2006, and has since been working to adjust its water chemistry to reduce corrosion; this effort is ongoing. Lead service line replacement in the distribution system has been halted for three years, pending possible changes to the US EPA Lead and Copper Rule. Meanwhile, monitoring, flushing and cleaning, and distribution system and pipe lining has been increased, and an expert panel convened in 2011 continues to advise Providence and the State on how best to resolve the corrosion problem.

Water quality sampling and testing not only ensures that each system complies with required monitoring, but more importantly, ensures the quality of the state's drinking water.

HEALTH's laboratory continues to take an active role in assisting water systems with required water quality testing. During 2012, HEALTH's laboratory analyzed 4,613 samples. The Office of DWQ evaluated 81,010 analytical results.

HEALTH also accepts water quality data from certified environmental laboratories on behalf of public water suppliers. The E2 web-based system provides an alternative to submitting handwritten or paper-based reports. All of the necessary legal, security, and electronic signature functions are included to provide for completely paperless reporting.

A broad spectrum of environmental tests and analyses are provided to public water systems.

HEALTH'S Role

- Test drinking water from Rhode Island public water systems for bacteria, organic and inorganic contaminants, minerals, and trace metals to determine safety and compliance with the Safe Drinking Water Act,
- Test potability of water from private wells,
- Analyze water samples in support of special pollution monitoring programs,
- Maintain analytical instrumentation to detect and measure the concentration of a variety of pesticides, volatile and synthetic organic pollutants in drinking water,
- Ensure the high quality of testing services,
- Operate the analytical laboratory certification program, and
- Maintain a list of laboratories certified for the analysis of drinking water, non-potable water and environmental lead

CHAPTER 4

PERFORMANCE AND COMPLIANCE